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THE VISUAL UNIT CONCEPT

Factors applicable to the maintenance of visual quality and distinction in the Forest Landscape.

Principal Investigator:

Robert J. Tetlow, Professor
Department of Landscape Architecture
University of California, Berkeley.

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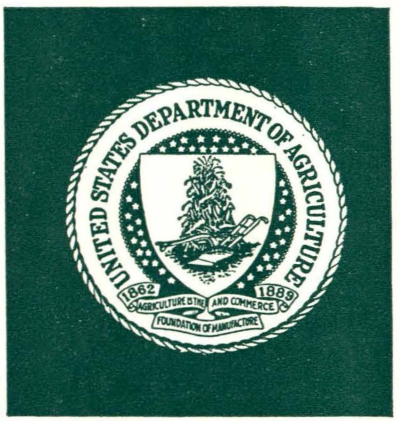

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ABSTRACT

The Visual Unit is a conceptual apportionment of the forest landscape for planning purposes. Units are bounded by topography so that the spatial dimension of landscape is emphasized. This report briefly reviews examples of the present state of visual inventory and analysis procedures, as applied in the Forest Service, and in other selected examples. Against this background, the Visual Unit concept is developed and described in graphic and narrative form. Elements which contribute to visual distinction and quality are described. Comparative rankings permit the aggregation of factors in each visual unit, so that comparison between units is possible. Using the system, a rapid survey of the resource can be made using aerial photographs and standard mapping techniques. The mapped units may then be comparatively evaluated using the graphic materials, as support to management and policy decisions on visual quality, as mandated by the Congress.

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Introduction

The United States is a nation with a landscape of great beauty. Unlike many less fortunate countries, we have virtually every significant landscape type accounted for, all with representative segments of very high quality. These range from richly figured desert to majestic arctic glaciers, from tropical seashores to high snowy mountains, from florid jungle to spare alpine ranges. Water abounds in all the forms that delight the eye. And for each landscape type in this rich array there are significant and handsome segments that remain largely unspoiled.

This has happened because, as a nation, we enjoyed the advantage of vast land areas acquired by purchase, after early settlement was established and a strong and popular national government was securely in place. This stability was instrumental in preserving large tracts of public land, particularly in Western states, land that was not immediately needed to meet the demands of westward settlement. These tracts--crucial today in maintaining our national scenic quality--have been in the possession of the government since the original purchase. But they have been subject to various destructive pressures during the intervening years, and only now are coming under the close and detailed scrutiny that accompanies management measures suitable for the needs of a burgeoning society.

We are a nation also fortunate in having natural resources in abundance; extensive watersheds, minerals, timber, and rangelands are an important part of our natural inheritance. Many of our important resources like ores and timber are disconcertingly located in the most attractive and diverse landscapes, thus compounding the problems of balanced planning; it should be apparent that scenic quality depends in large measure upon the very natural resource components that we must remove. Certainly, water and timber are clear examples. But the very mountains of limestone or granite, when transformed into cement and building facings, are the stuff of which our cities are being built.

Historically, the public has deeply valued the scenic attributes of the American landscape. Leading writers have written eloquently on the dangers of carelessly destroying our best examples as the pressure of expansion mounts. Accordingly, we have come to a stronger and often militant awareness of our diminishing scenic heritage as industrial expansion perceptibly replaces farms, cities expand exponentially, and resource production makes visible impacts on the land. Awareness has produced a significant popular movement. There is widespread concern expressed when unplanned or extravagant resource utilization, pollution, and the loss of scenic quality are publicised. To help mitigate these problems, new laws and protective regulations have been adopted. Some improvements are evident in revised management techniques, efforts at balancing multiple use conflicts, and new political awareness in government, but present programs are inadequate in many instances.

There are differences in the attitudes held by governmental agencies ,including the Forest Service, and those held by many in the public with respect to resource development. Some of those differences are due to differing political motive power. Others may be attributed to professional dedication often too strongly expressed by specialist agency personnel faced with complex, interacting issues. Still others are the result of a complex of systems set up to manage day to day affairs of the various agencies. Often systems conflict when applied across agency lines or when the public sector is called upon to participate in planning through public comment. At times there are competing systems managed by different departments in the government, ostensibly set up to manage virtually identical types of resources.

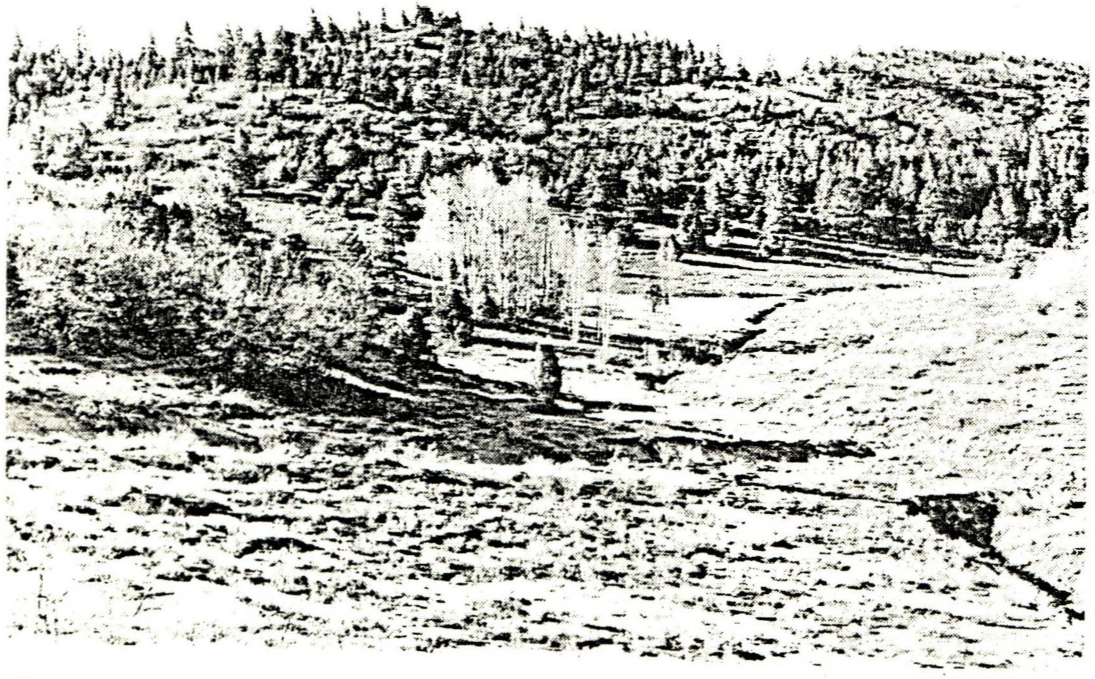
Agencies have a clear responsibility to balance their decisions and operations so that, ideally, each resource component may yield its proper share of the overall resource potential. In the process, there should be minimum damage and detrimental impact to the remainder. This ideal is seldom realized since natural resources are highly interdependent. Regrettably, scenic values are often sacrificed when balancing the data for or against controversial development, losing ground to persuasive arguments

of economic gain and short term need. Inadequate professional representation for this resource is another weakness.

The critical issue is the need for improved planning, to be based upon continuing development of a rational basis for decision making. Given management's usual reliance on economic indicators, and the mismatch encountered in using such indicators to characterize intangible scenic values, it is not surprising that false starts have been made and spotty results achieved. Most governmental agencies have instituted expensive and comprehensive inventories of the resource, and have incorporated resulting data in current management programs but there is little unanimity over the best approach. Significant differences may be observed by comparing the present programs of several agencies, or the administrative practices followed in different regions.

This report is concerned with improving scenic resource evaluation in planning. The subject is complex and difficult. Controversy is evident because of the need to study and manage immense areas; there are abrasive conflicts considering the extent of potential interactions. Unfortunately, the complex nature of scenic interpretation has been used as a weapon against rational planning advances, or as a management weapon aimed to restrict difficult conservation measures in practice. By focussing upon aspects of inventory and analysis that have not been adequately treated in prior studies, this report hopefully will be a useful increment in the process of creating an economical and supportable analysis of the scenic resource, strong enough to carry its weight as we ponder the consequences of varying future resource development alternatives.

1. The Landscape



2. Visible dimension of ecology

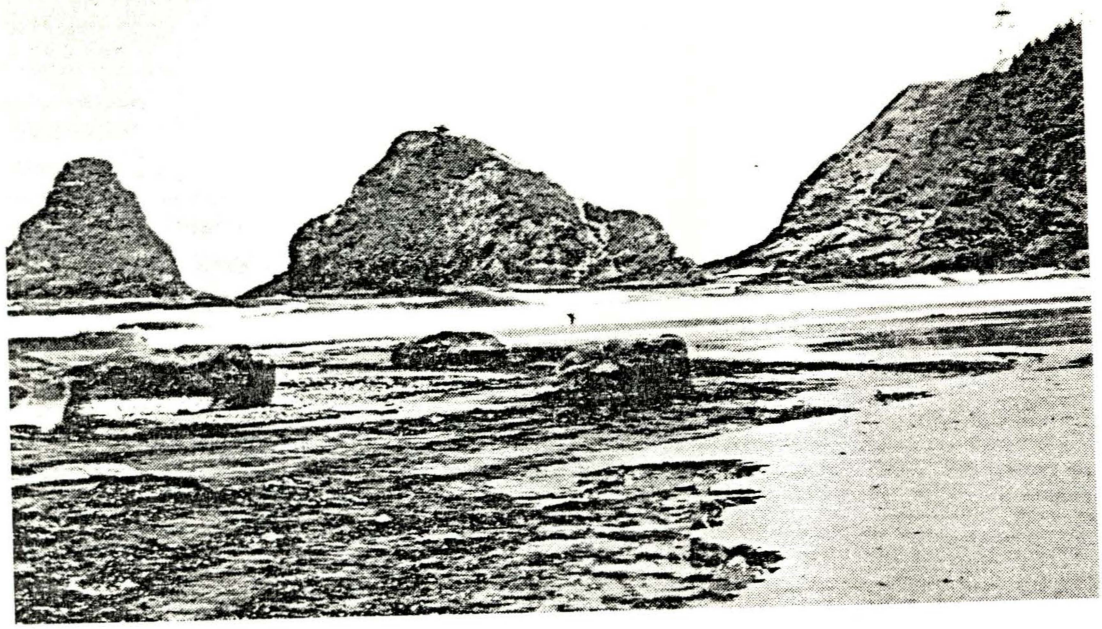
The Public Landscape as a Natural Resource

What is the Landscape?

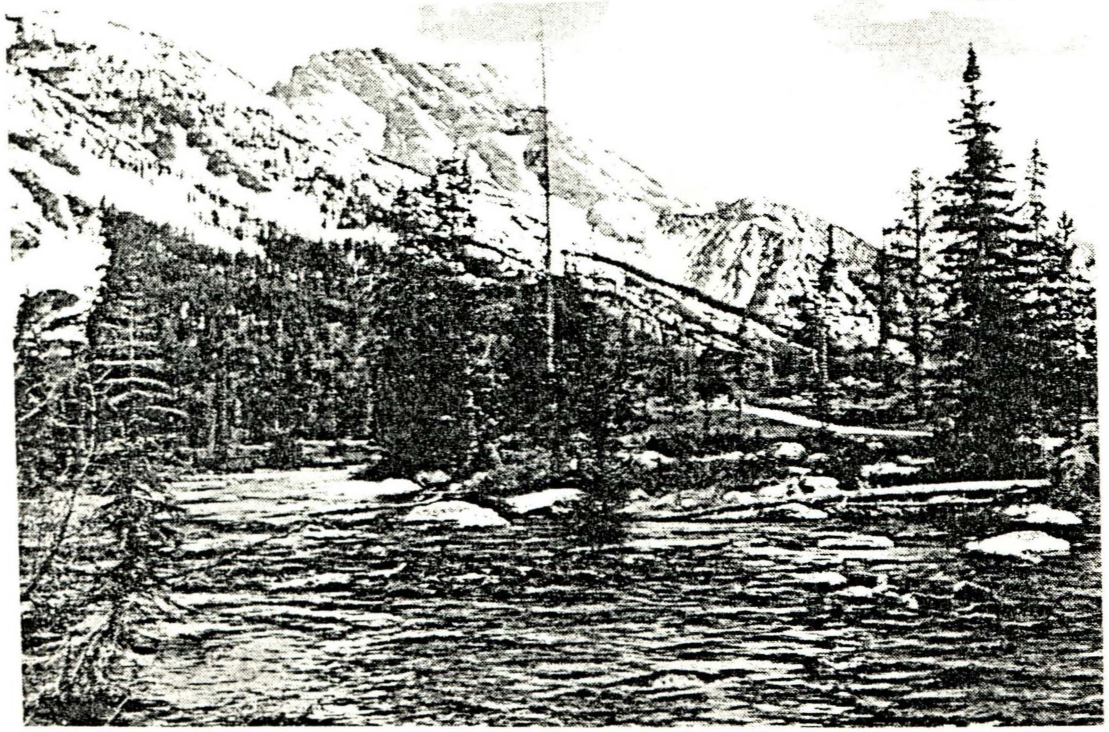
This report is based on the fundamental premise that the landscape is a valuable natural resource comparable to mineral deposits, river and stream water, and forests. As such it deserves parallel consideration in planning, in strategies for developing its potential, and in conservation.

There have been many definitions advanced for the word "landscape", each more or less suitable to the author's purposes and the context in which the word appears. Most apply "landscape" in the visual sense; referring to the seen elements--the mountains and trees; the lakes and streams; the farms and towns--that constitute the visible surface of the earth. Fig.1. An interested observer is assumed to be present; landscapes are looked at by people. Often "the landscape" means those things seen from one particular place or that are contained within the realm of one particular landscape, but it most often refers to the appearance of the broadly visible earth's surface.

For this report, landscape is defined as the visible appearance of the extended outdoor space in which people live and work, and through which they move. It includes more than we can be seen at any given moment since memory and expectation are a vital part of the experience. More than this, this definition holds that landscape includes that valued attribute of our world which exists because of the meaningful appearance and influence of natural relationships; the visible dimension of ecology. Fig.2. In this sense landscape is a significant learning and historical resource essential in education, and indeed, in life. (Leopold 1966, p210) This proposed definition does not exclude farms, roads, and buildings. On the contrary, it is essential to include cultural elements when they occur as part of the visible landscape; for in this visible relationship lies a more significant reality than a pretty view. This is the reality of man's impact



3. Images of Seacoasts



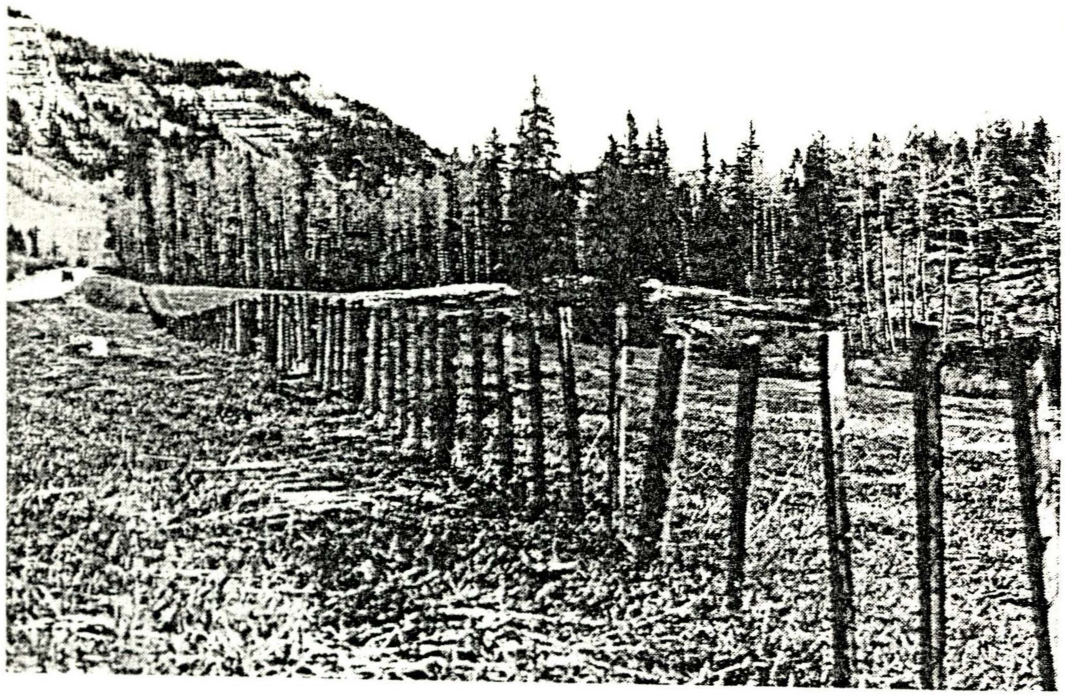
4. Attraction is a positive quality

on nature, his capability to shape the world to his needs, and the degree to which his sensibilities and skills provide those needs without heedless destruction, for there are many times when this is a positive and constructive action. This contrast and meaning is a very important element in our interpretation of the visible world, as the interaction of man with nature is one of our most vital and common preoccupations.

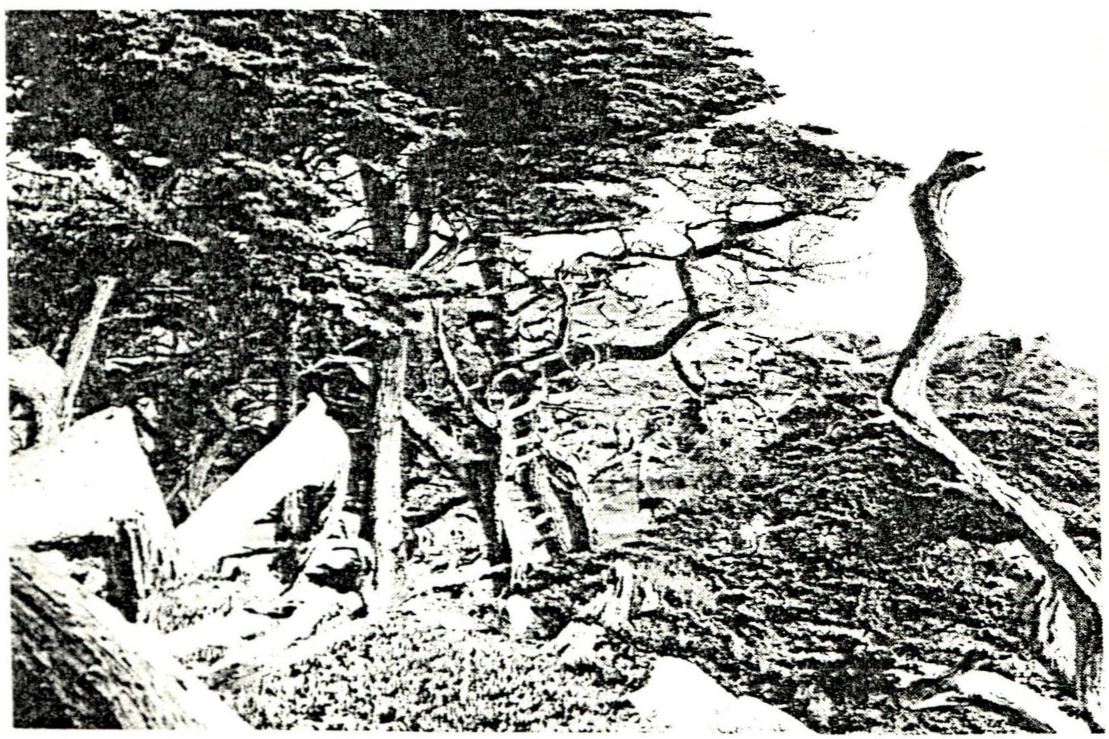
The word Landscape has been characterized as "slippery" (Stilgoe,1982).This may be a point of view understandable from a cultural geographer who includes in his definition of landscape only those lands altered by the hand of man; premeditated, contrived, or designed, and specifically excludes landscapes formed primarily by natural forces. It is my view that the definition must not be made so narrow. Common use of the word conjures up images of seacoasts and hilltops more often than it does views of suburbia, of forests of industrial plants, or mountains of mining spoil. Fig.3. In fact, in common usage it is a positive word that represents the energetic and creative interaction of man with the handsome and worthwhile elements that nature provides. Fig.x26. To see this relationship is critically important (Dubos, 1980, p143). To understand and appreciate the relationship properly we must permit nature to do its own remodeling insofar as this is possible, to serve as a measure of our successes or failures.

Perhaps the most important issue is to advance the idea that landscape is a continuum of surfaces and features, not a series of disconnected parts or places. The earth's surface, after all, is continuous although naturally folded and wrinkled; divided and sectioned by mountains, county lines, hedges, fences, and jurisdictions. The flow of surface is important as connection for view and movement, even though some portions are bristling with impediments, pitted by digging, or barred by rail lines, canals, and roadways. Our tendency to respect jurisdictions has fitted us with blinders to block out the discontinuities we create and the promise of other approaches.

Natural attraction and unity



5. Ordinary Landscape is beautiful



6. A detailed indicator

Attractiveness does not always mean beauty. But if "scenic" implies that the view contains elements that fix the attention, attraction is certainly a positive quality in perceiving scenic landscapes. Fig.4. However, if "attractive" is too modest a word to apply to great landscapes, we can admit that there is generous measure of beauty in the elements of even ordinary landscapes; literature is rich in references. Fig.5. (Nash, 1967)(Conron, 1974).

A less obvious aspect of attractive natural landscapes is their unity. Not the unity of the artist or designer, but rather the qualities of coherence which stem from the totality of the place. The essence of natural unity is the set of limitations placed upon living things in competetion for available food, light, water, and shelter. Their competitive arena is formed and is continually evolving by geomorphic development decidedly formgiving in action. All these life and death processes are completely dynamic and interacting; at the core of what we mean by ecology. The unifying effects of water supply are far more demanding than artistic selection of color and form; altitude diminishes the plant community in inexorable proportion; the wind forms and sculpts both plants and rocks to unifying compliance.

By contrast, the unity sought by the designer must be achieved by plan and artificial control. Lacking natural constraints which bring plants and animals together in reasonable equilibrium, design must be the constraining force. Perhaps we may concede that nature is the better because of the inevitable ruthlessness of the process. The outcome has a basic simplicity; it is a mirror of life processes. The casual observer may not be aware of all the minute interactions that are the concern of the ecologist, but the overall visible effect is very real. In essence, the extraneous and the misfit have perished or have been reformed into adaptive postures. It is possible to learn much from a careful study of the visible results of this adaptive natural system.

Because of the dynamics, the landscape becomes a detailed indicator of the current state of equilibrium, reflecting past seasons, heat or cold, the water supply, the

prevailing winds, and the debris of storms. Fig.6. These signs and signals are attractive portents to man who is equally concerned with the forces represented, although, in defensive gestures, he may be able to run faster, light the furnace, or paint his rooms in a technological emulation of nature's seasonal changes. The outward form of elements in nature are barometer, wind gauge, hygrometer, and thermometer to the observant; indicators hardly visible in man's controlled world. There is the longer-range landscape dimension also--the dynamism of interaction over time. While the process is equally sure, it is imperceptible and extended. To perceive its effects requires time and attention, careful observation and record keeping, and protection of the resource from gross disturbance. It is the physical extension of ongoing natural history.

These ecological signs provide interesting visual contrasts. The color scale of the seasons is the major reason for the tourist migration to the Northeast states during the fall, or to the Blue Ridge. Early Spring is the season for desert blooms. White winter in the mountains may be as exciting as skiing, and verdant Summer green is legendary in Indiana and Iowa. Beyond color and growth, are the indicators of stress and structural resistence to natural forces. The swaying of Pacific Northwest Firs in a storm is not easily forgotten, nor are the constantly changing wind wave patterns of seashore grasses, or the skating drift of blown sand. The ephemeral hot dusty blowing in summer deserts is a characteristic seasonal visual hazard as are winter mists in Oregon, Santa Ana gales in California, or snow drifting in Wyoming. All are part of the dynamics, fleeting and yet constant in their regional presence.

A Setting for Cultural Change

This dynamic landscape provides what man cannot; a distinct sense of geographic identity and place. Migrating to a geomorphic arena, perhaps as seeds carried by birds or as self sufficient and mobile, living forms adapt in their competitive battle for food, water, and shelter, making each place on earth unique. What an infinitely

valuable dimension this is when seen in contrast to the results of man's propensity for homogeniety and standardization.

Improved techniques of building construction, shorter lists of affordable manufacturing materials, limiting laws and regulations, custom and cultural preference, fashion, and many other forces work together to level cultures. As transport improves, the distinctive forms and materials of a given place spread widely from their point of base origin. As these prove durable, fashionable, or economical, their use spreads, and soon all towns resemble other towns, similar automobiles are congested everywhere, Levi's are on the international want list, golden arches are local landmarks, and architecture loses much of that distinctive local flavor derived from local craftsmanship and materials.

As populations spread, more of the natural landscape is preempted. Building space, roadways, and storage, cover large regions with the chaotic disturbances which energy consumption makes possible. Then we will find ever increasing value in the qualities which the landscape provides naturally. It will be important to relearn that physical and climatic limitations are supremely important formgivers. If we are observant, we may discover that the unchecked spread of suburbs is visually dull by comparison, and that diminishing supplies of energy may soon make it impossible to cover or remove the heaps and debris pits of our mistakes.

Landscapes and Recreation

An undisputed value of undeveloped landscapes is their potential for recreation. Despite the interesting aspects of urban city lots and junkyards, such places are not widely chosen as picnic or play sites if there are other prospects. The plants and ground covers of natural sites are desireable and attractive, even when terrain and drainage may not be optimum, or furnishings suitable. But for an experience that provides freshening contrasts to the stresses of urban life, even quality urban parks lack the coherent yet complex fascination inherent in a natural setting.

In the competition for scarce energy resources, natural sites have an outstanding advantage. Their form, quality, and character have evolved naturally and often require only minimum improvements to make them desireable for recreation and as environmental contrast. With such simple conversions, there are no costs comparable to that of restoring waste urban land into habitible parks, today a major social issue. For this reason alone, conservation of available sites against future need is the central argument for a rational planning approach, the point of this report.

Cities do not have adequate protection for valuable natural sites as the private sector races to develop. On this point, they are in a similar position to the separate agencies of the federal government, responsible for land regulation and resource development, but pressed by private exploitation. Project scales are different but the problems are similar. A key issue is the extent to which development should be permitted to encroach upon or to affect valuable reserve sites identified in city plans. Often modifications of adjacent areas may trigger ecological pressures sufficient to alter natural balances, and destroy the thing one is attempting to save. A new kind of urban forestry is one distinct possibility, where the analysis and selection of remaining unbuilt urban sites could provide recreation and bridges to the wider landscapes beyond the cities.

A clear example of this desire for islands of natural relief, is the frequent wish to preserve stands of trees in the midst of suburban housing. When such development is carved out of a larger forest, the alteration of a single factor--the light balance--is usually enough to radically alter the previously desireable forest character and produce new and often unmanageable conditions. Another example is the alteration of drainage patterns, affecting the supply of water to deep root systems. In California, many Oaks are particularly susceptible to this problem. As a result, few developments built on Oak-covered lands have successfully retained significant numbers of trees for long.

7. Exploitation exceeds renovation

8. Agriculture is visually important

These facts suggest that, if natural regeneration is to be used to help maintain the good health of a valued landscape, adequate buffer space must be retained, the size of the site must be kept large, and localized alterations such as clearings or irrigation must be very carefully controlled. If not, the consequence is rapid acceleration of the adaptive process with significant losses in mature trees or other elements that depend upon stable conditions for survival. Ideally, fragmentation of the landscape must be avoided, and the subdivision of land surface for man's needs should closely emulate the natural divisions of the landscape of geomorphology.

Alterations to the Natural Landscape

It is clear that the visible natural landscape is being exploited at a rate that exceeds natural renovation. Fig.7. The long-term result of this pressure is best seen from an aircraft. Despite the fact that many highway rights-of-way include screen planting to conceal visual irritants like junkyards and quarries, much of this reduction in quality can also be clearly seen by automobile travelers. Those who have traversed the same routes over many years will have the clearest image of the present trend.

The major sources of pressures are urbanization, forestry, and mining. Urbanization often occurs at the expense of agricultural lands. While the increase in urban extent is easily visible, the absorption of expansion within agricultural holdings masks the immediacy of the changes as they occur, unlike those in forestry and mining. With Mining, because of the highly visible character of the spoil or cover materials, short term effects can be pronounced, In most places, however, mining is a lesser visual impediment. Today, the need for coal as an energy resource promises to sharply reverse this situation. In many coal-rich regions, the magnitude of surface alterations, and the current difficulty of realistic renovation of surface and cover, pose a virtually insuperable problem in the maintenance of visual quality.

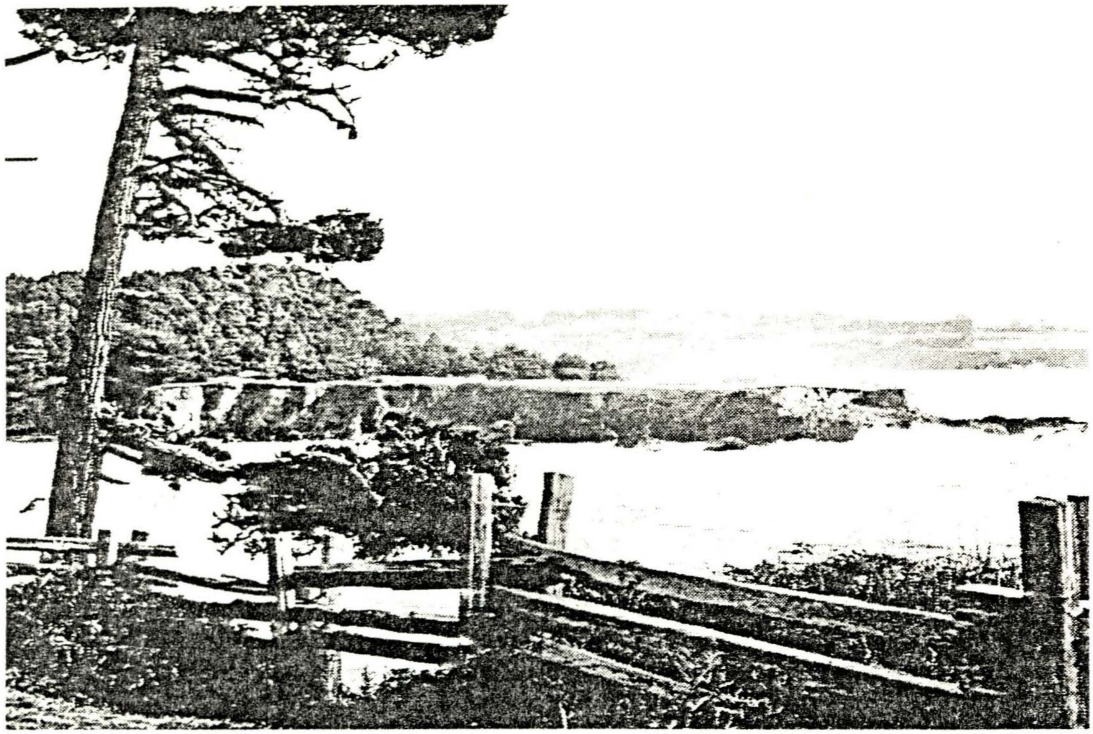
Grazing and agriculture exists on land of high visual quality. Fig.8. However, much of the land under cultivation has been in this state for a long period, and recent alterations are not so sharply visible. Varying crops and rotation of crop types creates a normal dynamic that masks major changes in the extent or location of new fields or leveling for irrigation.

Unfortunately, some pressures are not evenly applied to the whole of the public lands. Forests do not flourish everywhere; the pressure on this particular resource is concentrated. Unfortunately, the best growing climates are also those most likely to be desireable for recreational and scenic reasons.

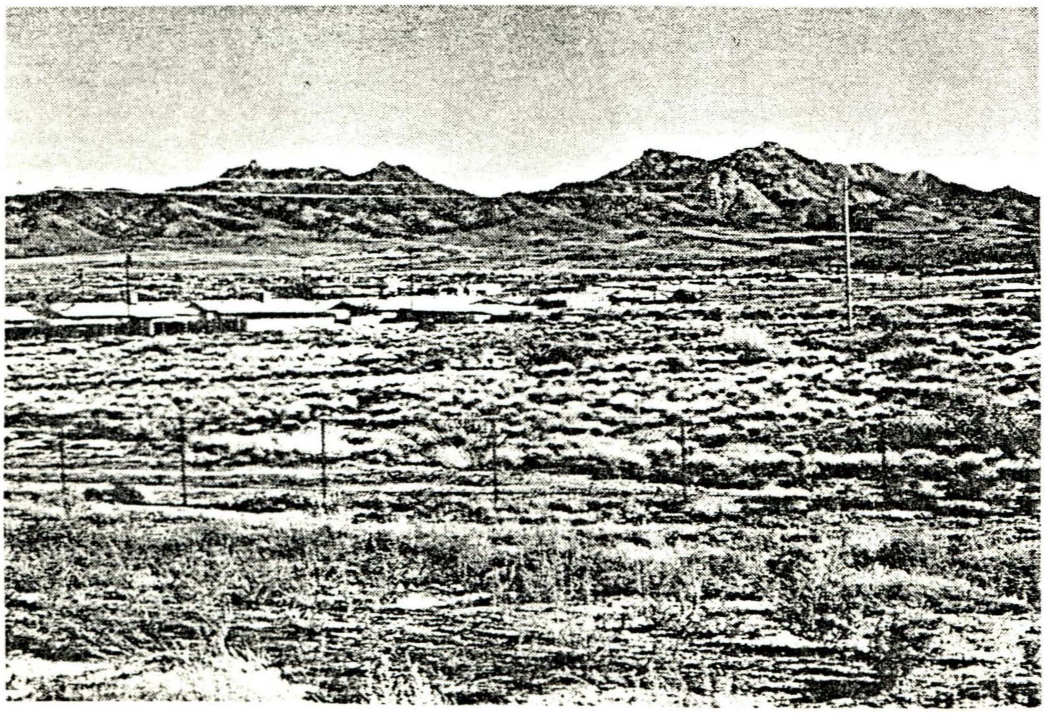
A relatively new part of the problem with Forestry is that the composition of remaining forest lands has altered. Old growth trees that provided visual clues to intactness have been radically diminished in most areas. Despite progress in increasing overall harvest volumes because of a more rapid growth rate in younger trees, the accumulated visual effects are poor. Attractive forests are growing scarce and those remaining should be carefully managed for a wider and more balanced range of activities than present forest management and the public think are essential for today.

New problems are surfacing. The increased extent of aerial pollution could well accentuate early visual effects. Some of this pollution, for example acid rain, may well have secondary effects as water contamination affects the natural resource. Fire is presently a serious problem, for its visual consequences, for the loss of the exploitable resource, and for the cost of its control. The diminution of underground water supplies is a growing problem in the Southwest as the intrusion of saline water is proving to be a problem in many heavily pumped areas. While it is true that such examples are not presently critical in their visual effects, as the resource become affected, so will the visual quality suffer.

Perception of the Problem



9. The good quality of recreation



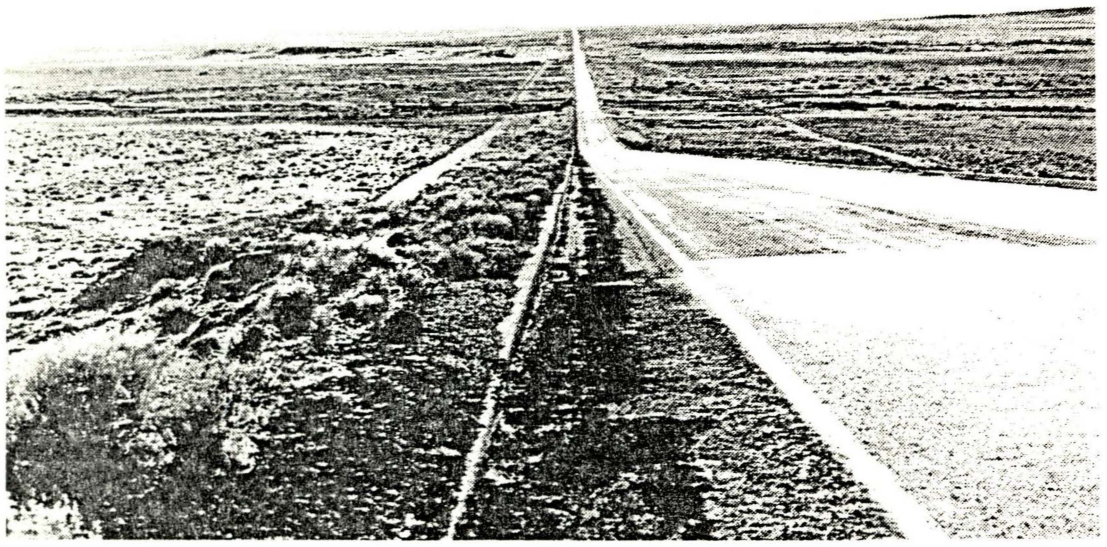
10. Unfamiliar landscapes

As these visual effects become increasingly pronounced, the efforts of certain conservation-minded groups have redoubled, and their political voice and base of support has increased. Often, they have gained supporters by presenting the damning visual evidence of imprudent or overextended resource policies. Their detractors often show, by contrast, existing views of scenically ideal wilderness, park reservations, or untouched sections of native landscapes. In any hands, Visual quality can become a powerful tool.

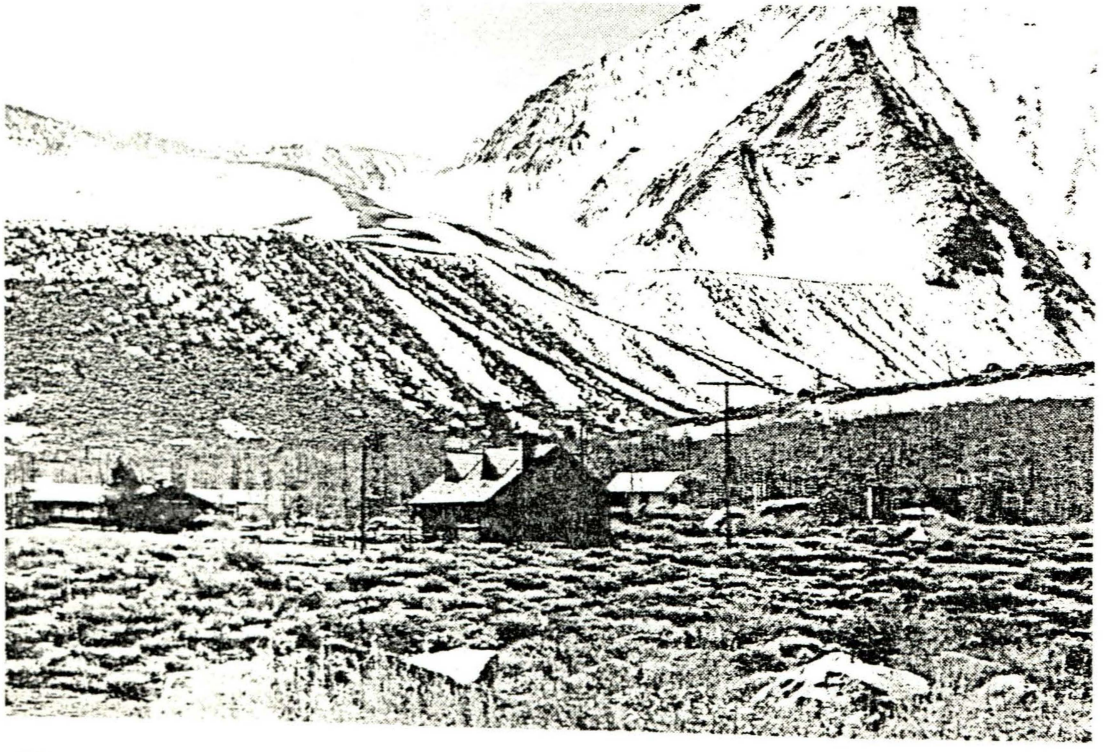
As American families discover for themselves the growing shortage of safe and attractive outdoor recreation areas, this new awareness may well redouble the case being made by organized conservation groups, that balanced use of the resource is not happening in fact.

The good quality of the Recreational sites in our National Parks and in Most of our National Forests serves to mask the shortage to some extent. Fig.9. Most visitors have come away with favorable impressions of the resource, often despite the fact that they have not found the space or accommodation desired. In some places, these past impressions may be weakened as more mature timber is harvested within existing campgrounds, mining becomes visible from parks, commercial exploitation on private lands has a spillover effect on actual park lands, and recreation areas are closed because of water pollution or other hazard. All of these events are real and they will inevitably increase.

A major problem exists with respect to the great extent of our natural landscapes. The vast majority of our citizens are not familiar with what they look like, where they are, or their present condition. Fig.10. As suggested earlier, the best way to obtain a general overview is to undertake an airline flight, particularly on an airline tht connects smaller cities with relatively short flights. The altitudes flown by these aircraft permit a much more detailed view of the ground than may be obtained on a commercial aircraft flying at 30,000+ feet.



11. Short routes and easy gradients



12. Insistent pressure of development

Access to our public lands is restricted. Such restriction is principally the product of poor roads, coupled with the aversion many feel for undertaking the hazards of unpaved and winding back roads in vehicles designed for highway driving. However, there is a widespread tendency to place additional bars to travel. Fire is a constant worry, and during the fire season many roads in hazardous areas are closed. In other places, unauthorized camping is a problem often solved with a truckload of gravel carefully placed in the roadway. Gates to control access are used in areas where spraying is practiced. In other areas, paved forest roads astonishingly begin two miles from the nearest highway connection. It is clear that an extension of the paving to the highway would result in more traffic than local administrators are willing to bear.

This unknown landscape, at times relatively untouched wilderness, and at times overused and unsightly, is a key to the problem of intelligent participation in planning by an informed electorate. It is no accident that some of the most vocal objections to poor land use practices, and conversely, the greatest advocates of wilderness preservation are the hikers and backpackers. They have seen the best--and the worst.

The point is not to castigate federal agencies and states for their circle the wagons practices.The key point is that the present tendency to base planning policy on views from existing roads fails to provide adequate public exposure to those valuable visual components of the landscape that are now badly accessed and dimly seen. These remote landscapes will be more important than ever in a period of diminishing resources and greater expectations. They deserve the light of public scrutiny.

It should be recognized that most roads were constructed to provide easy gradients and short routes. Fig.11. These criteria are intimately related to cost. Visual and scenic values along the route are often plus values, not the basic or motivating force. Even when the route does pass over scenically valuable terrain, the major considerations remain functional, not aesthetic. However, at this point in time it may be appropriate to reexamine those historic priorities.

Relatively few roads have been constructed primarily to gain access to scenic landscapes or regions in any significant or unified way. Exceptions tend to be short side roads to a particular element of visual interest. The Blue Ridge Parkway is perhaps the best example of a more generous possibility; it generates sustained visitor enthusiasm for the landscapes it accesses and makes a substantial economic impact on local communities.

Planning for the Future

The present state of planning on the public lands is a holding operation. There is a growing realization that the country requires more from our public resource holdings than minerals, timber, and water. Pressures exist for both recreation space and facilities, for improved methods for determining the present visual state of our public lands, and for a better means for including visual questions in the planning process.

Congress has responded by enacting legislation that would broaden the scope of planning to include resource commodities that do not carry a price tag. The visual and scenic qualities of the landscape are recognized as legitimate and valuable components of the system. With this encouragement, many states have followed suit with programs of their own.

Despite these positive signs, progress has been slow. The financial support needed to implement new program directions has not been forthcoming. Following an initial spate of new funding to support mandated objectives, that support has all but vanished. There are threatening economic pressures to expand the rate at which timber and minerals are removed. At the same time, the funds to restore disturbed areas, replant, repair erosion damage, and build new recreational facilities have been reduced or are unspent.

Federal agencies have responded to existing legislative mandate by developing their own procedures for inventory and analysis. Regretably, there is no binding coordination between these efforts; each agency has a different approach to the problem. Somewhat the same conflict may be seen in the jurisdictions of other agencies charged with the management of federal land. Add the separate jurisdictions and problems of the states, and the difficulties of management to achieve unification of extended resource areas becomes apparent.

As the effects of present planning come into being, there will be court tests of specific decisions. Some shortcomings have become apparent and adjustments must be made. The present procedures are subject to continuing improvement and the filling in of detail. Field verification and support will be improved as actual sites come under scrutiny and development.

In an ideal future, agency differences will be adjusted, and there will be agreement on inventory and analysis standards so that scenic resources overlapping upon two or more jurisdictions may be treated without discontinuities. Until then, it is important to continue the work of identifying the key components that contribute visual value in the landscape.

To support this ideal future, the feedback of the public is important. Improved means need to be found to convey long-range plans to local groups, and to ensure that nationally important issues involving scenic landscapes are given adequate review at national levels. Competing agencies should cooperate in presentations to ensure balanced views. The opinions of naturalists and conservationists must be included. The object must be the wisest choice of development options to ensure the minimum impact on the scenic environment.

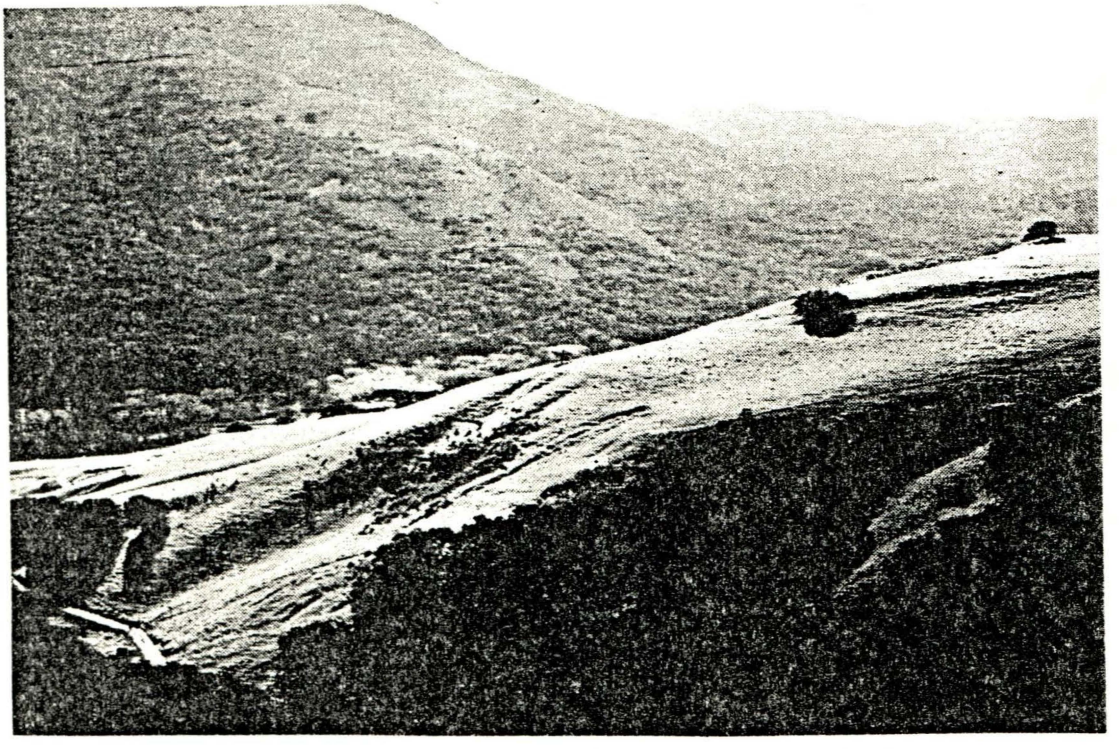
Time is of the essence. Any worthwhile enterprise demands time to establish itself and to gain momentum. Planning programs have not had that advantage in recent years.

The conservationists effort to arrest the attention of the public during the 1960's demanded a major expenditure of energy, impired leadership, and a friendly political climate. Creating that climate and that support took time. Although that period was followed by significant moves in Congress, the momentum has been weakened by failure to implement programs that could attract continuous support Landscape and resource issues enjoyed a favorable light of publicity; unless such momentum can be regained, many hard-won gains will be overwhelmed by the contining passage of events.

The natural landscape is vulnerable to the insistent pressure of resource development. Fig.12. It should be the business of all agencies to utilize the best planning efforts and the greatest care to avoid unwarranted impacts. There is comparatively little untouched landscape still remaining to serve as a measure for the rest. Planning should ensure the retention of a representative portion for the future, before the present pace of exploitation damages areas that otherwise would have remained valuable. (Lynch,1972, p.107)

The resources which can be applied to achieve this goal are limited. The scale of the American landscape under public control is so large that only carefully selected areas can count on adequate funds and attention. Careful planning will be bound by the same restraints. Methods must be found which will enable a reasonable-- hopefully an adequate level of planning--to occur with available funds. This will mean that the methods adopted for comprehensive future planning must be practical; adjusted to practical financing, a practical time scale, and the availably of technicians to implements the necessary planning steps. However difficult this will be to achieve, an essential requirement is that all the resource is accounted for; all areas will have had some level of examination in order that no areas of visual quality may be lost. There is a need to complete these essential studies before the present pace of exploitation damages areas that otherwise would have remained valuable.

13. Areas with present values



14. Illumination creates changing effects

The methods necessary to achieve this must be scaled to the available agency skills and manpower so that results may become available within a reasonable time. To do this, it will be better to concentrate upon the essential framework of analysis, identification, and selection than to devise procedure that are so complex and detailed that they are inherently impractical. The principal object is to identify those areas with present values which may contribute to the overall scenic quality without the expenditure of scarce capital and development effort. FIG. 13.

Snow (Snow, 1973) has listed seven essential hallmarks of a practical and economical inventory and analysis system. These are:

1. Accuracy of the methods to ensure consistent use.
2. Flexibility to fit various scales of landscape.
3. Replicability from time to time and place to place.
4. Comprehensibility of methods by system users.
5. Compatibility with other inventories.
6. Efficiency and economy of application.
7. Ability to use available data to achieve results.

The Visual Management System of the Forest Service, and the Visual Resource Management System of the Bureau of Land Management must be revised. There is inadequate balance in the present systems because of a management bias for areas with access, and questionable attitudes with respect to those who view the resource, The emphasis placed on viewer sensivity has created a skewed result because of this dependence upon resort facilities and recreationally traveled roads.

With a comprehensive balanced inventory completed, it will be possible to undertake planning that will not exclude large portions of potentially usable land from serious consideration.

The Visual Resource

Personal Vision

Most people enjoy normal eyesight. The visual world that each of us sees is bright and crisp, we can look deep into shadow where the camera cannot, and all is vividly contrasting and colorful, unlike the images of camera or television. It is seldom necessary to concentrate in looking; we simply do it, receiving images useful to the passing moment. Still, human vision is disconcertingly complex and difficult to unravel. At some deeper subconscious level, we are adding to our memory store of experience; a basis for making lasting judgements about the world around us. (Davidoff, 1975, p 131). Because we take vision for granted, we find it difficult to explain our motivation or the sequence used in seeing the ocean, patterns in the rocks, or forest landscapes. Psychologists work intensively to discover how we are able to reduce this visual richness to some useful level; how we turn the visual volume control down to softer and bearable functional levels. There are many questions that remain.

Reaction to the visual world is a personal thing, a composite of experience, interest, and mood. Each person colors his environment under the influence of varying temperament, bias, and preference to create a unique way of looking and of feeling. There are other complexities. Time will have its way; yesterday's landscape will not be tomorrow's. Experience, travel, aging, and poor health affect the ways we react to familiar surroundings. There may be only small perceptible differences--sufficient to provide richness in subtle reassessment of familiar scenes--or there may be major adjustments that completely alter old images and attitudes. (Lowenthal, 1967, p1) (Davidoff, 1975, Intro) Such adjustments are responsible for the continuous reinterpretation of the landscape we see. Part of that process includes the fresh view before our eyes. Part is dynamic interaction with memory; our memory landscapes incremented by experience in other places or other times.

Because vision is substantially mental and personal, it is not possible to know the reactions that others may derive from a given landscape; we have only our own reactions as guidance. It is generally assumed that we all see things similarly. (Boulding,1961, p14) The evidence of description to be found in literature--description of places we use as guidance in travel and study--is substantial corroboration. Our personal interpretation is the unique dimension.(Davidoff, 1975, p55)

Describing quality landscapes

How to describe landscapes of high visual quality? A common tendency is to use the word "scenic".

"Scenic is usually found as an adjective modifying "landscape". Its root, "scene" suggests a landscape, view, or composition observed from a single point, or from a successsion of points. The unspoken implication in "scenic" is that the elements in view are notable and compel attention, and that the prospect or view is attractive, of substantial scale, and even grand. "Scenic" is usually thought of as a positive expression, perhaps even a superlative. "Landscape" and "scenic" are words that commonly occur together--not a particularly remarkable observation--except for the fact that "scenic" is more than a simple adjective in the context of this study. We are often reminded of its relation to static scenes by the persuasive presence of "scenic turnouts" on highways or in parks. Such single viewpoints provide a look at only limited aspects of any attractive landscape. Often, the presence of such viewpoints is enough to qualify a road as "scenic". It is precisely this tendency to design and plan in such limited ways that is at issue in this report. The methods to be described present the possibility for a more comprehensive view of the visual resource.

Artistic compositions and photographs have been called "scenes", suggesting a fixed grouping of elements within a limiting frame. In reference to the theatre, "scenes", or

"scenery" are appropriate terms for the creation and arrangement of theatrical settings or backgrounds.

"Scenic's" companion word "Landscape" originates with the painters of the Dutch countryside who gave the world of art compositions of farmland, canals, and dike workers. Their dramatic cloud formations, patches of sunlight, and hedgerows were illuminating representations of Dutch farmland, and the characteristic appearance of a distinctive part of the world.

The actual landscape is a world removed from the "scenes" of the artist or the theatre. Still, by recognizing elements from picture postcards or familiar photographs, one might be impelled to stop in movement and to reflect on the artistry of the photographer or the painter who succeeded in capturing the spirit of what is seen. Viewpoints may become famous as visitors recognize the locale represented in well-known paintings. Inversely, certain views have made the reputations of artists. Some places have been given names to commemorate the painter's choice of locality, or to endow the setting with some aura of the popular fame of the artist. Several artists may be identified as the original motive power for public interest in a specific place. (Nash, 1967, p82). Moran Point in Grand Canyon National Park is an example, commemorating the role of Thomas Moran in the public recognition of the Canyon as a natural wonder.

Other painters have been endowed with the power to communicate landscape quality, and have been influential in preserving natural scenery. Both Yellowstone and Yosemite National parks owe a debt to the effectiveness of artistic genius. Thomas Cole, Albert Bierstadt, Thomas Moran, and Frederick Church are familiar names among those artists whose landscape paintings did much to awaken Americans to the magnificence of their native landscape. From this freshened consciousness, proposals to preserve or to prudently utilize valuable and handsome sections of the wild took root. In evaluating the work of artists such as Cole, Homer, or Bierstadt, we should remember that the effect of their paintings was particularly powerful given the limited

travel opportunities of the time and the mystery of the unknown wilderness. The limited and restricted space of the canvas became a necessary substitute for those real landscape spaces unattainble for the ordinary person.

Artistic and skillful photographers--like painters--depend upon careful composition to achieve visual impact. The position of the camera may be decisive. Perhaps the final photograph was the result of choice in selecting only parts of a larger possible negative. Whatever the method, the selection, arrangement, or limitation of content reflects a conscious artistic decision. The process is not unlike the creative steps taken by painters. Both produce images of landscapes. It is possible that the use of this adjective, "scenic" derives from the power of photographs to suggests landscape character. Certainly our world view of land resources derives largely from such sources. Compelling photographic illustrations grace familiar periodicals such as the National Geographic Magazine. There are excellent picture books to extend our comprehension of the range and character of the earth's surface. (See Garnett, 1982). "Scenery" appears frequently in their titles.

The process of education, including as it does, so many photographs and illustrations, may help account for the way we frequently think of landscapes as carefully composed but fixed views, in contrast to the dynamic reality of visual perception in actual landscape settings. The adjective "scenic", derived from such sources, may impede our thinking because of its traditional application, but its use is so widespread and generally meaningful that we cannot lightly discard it.

A scenic landscape is not a collection of isolated scenes, but a landscape of quality, complex and extensive, within which individuals may find ample and varied opportunity for visual satisfaction and pleasure; where the fit of elements tends to unify the whole. It is not a place where interesting vistas are stumbled upon, as if by accident, or places where the guidebooks lead you to the perfect prospect, but a landscape of strong identify, where cultural elements--if present--make a comfortable fit, and where it is simply a pleasure to look around and move around.

Esthetic Principles In Landscape Analysis

Critics of art, painters, philosophers, and psychologists have all had a role in developing the Esthetic Principles of Art, essential as a means to study the effectiveness of composition, form, and color in art. Critics have applied such concepts to explore the creative process and to construct a rational basis for detailed criticism. Psychologists have tested them by noting the reactions of observers to certain arrangements or compositions, in practice and by exeriment. Teachers use them to suggest to students an order in a range of possibilities. Philosophers have commented on beauty and order--the root of esthetics--adding to our store of shared ideas for the very complex proces of creating visually and emotionally satisfying images and works of art.(Greenough, 1947; Arnheim, 1974;). These esthetic considerations are important in any analysis of segments of landscapes. Here the principles of artistic composition can be applied in judging specific groupings of landscape elements and can help us understand why some compositions are effective and attractive while others are not.

In the landscape, the observer's frame of reference is distinctly different from that of the artist. As observers we are free to adjust our angle of vision or our distance, unrestrained by frame or edge as with a canvas. The landscape is open and unbounded, except by such framing limitation as we may choose in order to limit our vision and view to a specific place, specific group of things, a farm, a waterfall, or a clearing in the wood.

Despite this freedom to adopt varying positions, stances, or angles of view, we continue to emphasize certain relationships as we gaze carefully at an interesting grouping of colors, forms, or natural elements. In analyzing why we may be attracted to a particular grouping, esthetic principles are immensely useful. Founded upon the idea of relationships of form, color, texture, size, edge, juxtapositions and more, they enable us to find a starting point for detailed evaluation of specific compositions of elements as seen in specific places.

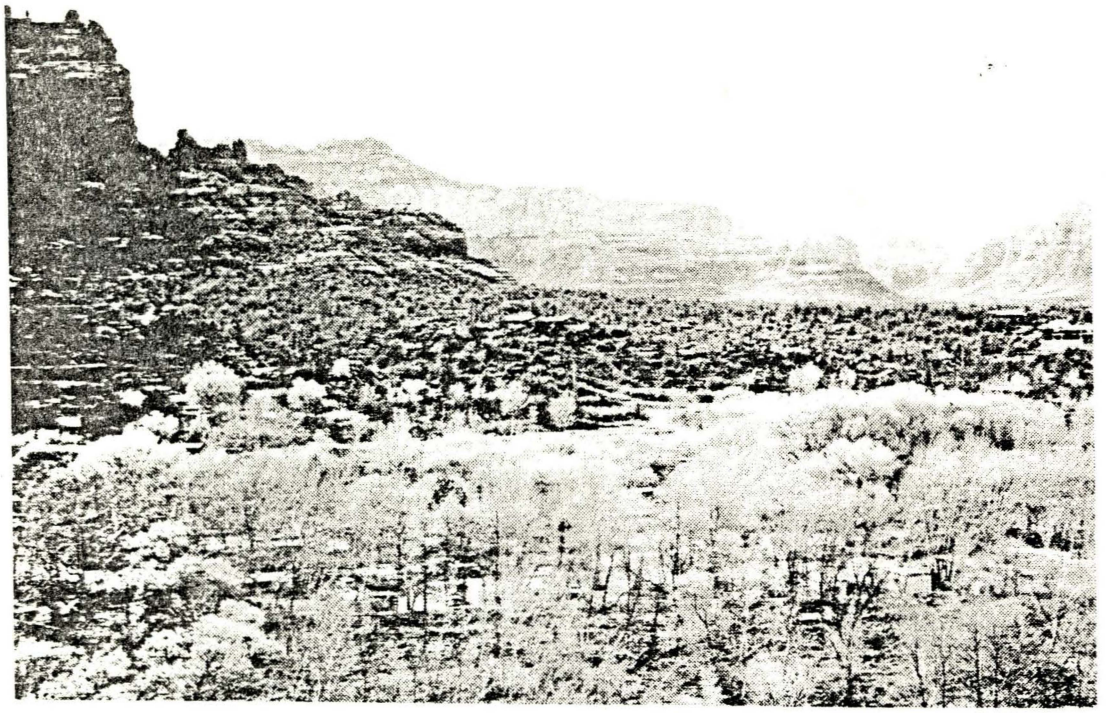
Some of the most influential materials on the study on visual landscape quality originated in papers published by the US Forest Service. Litton applied principles of artistic composition and esthetics in his landmark work on Forest description and visual value. (Litton, 1968), This material formed an important foundation for the Visual Management system which followed. A second paper by Litton, "Aesthetic Dimensions of the Landscape", (in Krutilla, 1972) presented additional concepts that have been much quoted and used in subsequent visual analysis systems for the improvement of planning in natural resource systems.

Dynamic Aspects: The observer in the Landscape

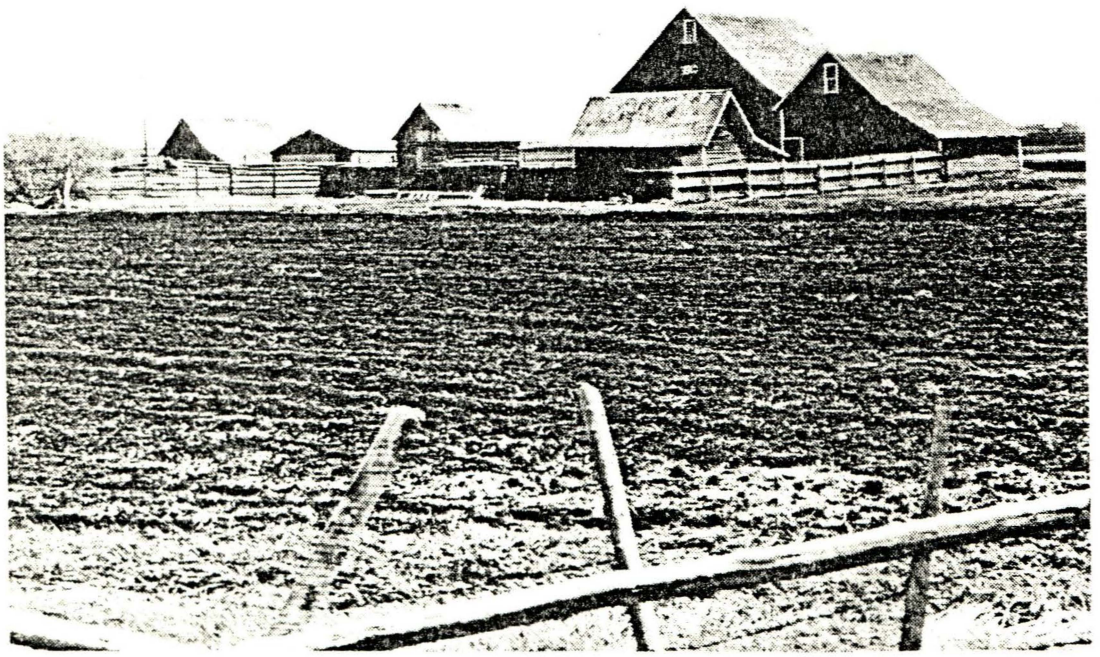
Ordinary vision is anything but stagnant or fixed. In walking, travel, and work, the landscape is observed dynamically. Indeed, the act of personal movement affects what and how we perceive. It is, therefore, important to base landscape analysis on elements which are decisive and persistent in vision--large enough, bold enough, or extensive enough to provide a reference against which the events of vision may be measured in a continuium of perception and motion.

Moving through landscape is to enjoy a dynamic and constantly evolving personal vision. There is freedom to move forward and back, to this side or that, and to rotate head and eyes freely looking at what is interesting. Views are not static but in constant flux.

Light during movement creates vivid and changing effects, responding to differing angles of reflection. Fig.14. As the light changes, colors are altered and transformed, shadows lengthen, and edges are at one moment bright and contrasty, the next dimmed in shadow. Light also changes direction with movement of the sun, altering surface patterns and textures. Glancing light accentuates surface textures; direct sun often obliterates details in its glare. Details clearly seen at one moment vanish with varied



15. Texture of tree groups



16. Farms are visual accents

forest takes its place. Fig.15. The surface characteristics of granite, distinct at close range, becomes the bounding mountain.

One moves from point to point gaining or losing the advantage of elevation. Tree groups along a roadside shift in accordance with our motion to progressively screen or reveal elements in the distance. Flanking canyon walls reduce the visual field to a narrow sector. With motion, there is freedom to select an interesting line of advance, and opportunity to choose better positions or viewpoints. Visual interest is the lever for seeking key features or meanings that are elusive in a limited narrow view.

The individual in the landscape is an individual in space. As a museum visitor is free to move from room to room, and one display to another, so the hiker in a mountain meadow, or a youngster in a city park has physical freedom to stop, run, or sit. Vigorous movement is hardly necessary to scholars of art; their probable objective is the work itself, displayed within each museum space. Within the confines of frames, his visual objective may be satisfied. By contrast, for the the hiker and the recreation seeker, there are no formalized targets for vision, no frames, and no structured architectural solution; the pleasure of vision outdoors is free and unrestrained.

Nontheless, for the museum goer, like the hiker or the park patron, there is an actual spatial dimension, a real world in which one may become aware of himself and of chosen paths or stopping points. In the museum, that space is the architecture within which all is housed. When such space is well lighted, finely proportioned, and graceful, the art does not suffer. Rather the artwork benefits from the combination of spatial qualities; that which is real to the museum stroller, and that which may derive from our imagination as we gaze at the created landscapes represented in each painting. When the architectural space is poorly arranged, dark, and its plan is confusing, art suffers. Then the limitations and the lack of attraction of the architecture clouds our ability to react, and the reflectivity we may expend on the artwork is replaced by irritation and fatigue.

Framing views in the landscape.

The neglected dimension of landscape analysis is three-dimensional space. This is a dimension not covered by the terminology of artistic and compositional philosophy except in a very limited sense. An explanation is that art works are commonly two dimensional creations on paper or canvas. When the subject of a work of art is representational, there may be effective hints of a real spatiality. As the principles of artistic composition suggest, these hints or "cues" may be visibly overlapping surfaces or elements which appear to diminish into distance. Another such cue involves alteration of detail and color to alter apparent pictorial distance. However, this representation is not the reality of space, but a geometric convention or manipulation that only suggests elements in space. Most importantly, because the lines of a painting can not move, the representation must be as seen from a single point in space. Here again we have the "scene"; a carefully constructed composition. Gibson sheds considerable light on the problems of mentally constructing a "scene". (Gibson,1979, p.222)

Acknowledging our past dependence on paintings may help to explain why viewpoints are comfortable and common in scenic landscapes, creating a relatively loose type of frame for viewing. On the restrictive side, such places impose an insistence that visitors see what is offered. A viewpoint normally has strong directional clues to aim the viewer in the right direction. The shape of the viewpoint, thrusting toward the distant landscape, seems to project both itself and viewer forward into the view. In some cases there are apertures in walls, fixed telescopes, mounted informational messages, and in extreme instances, arrows pointing. To help construct an infallible directional hint, the visitor may be aimed like a cannon at the the most dramatic juxtaposition of elements, the most striking light, the boldest colors, or the one view framed by trees. Extra advantage is achieved by selecting viewpoints on cliffs.

There is obvious value in such careful selection of view places. One simple example:

reduction of the road hazard created by drivers seeking an anticipated view from the landscape as it unfolds. Another: to present vistas which visitors have learned to expect from travel information, history, literature, or the travel experiences of friends. Having frequent viewpoints from which to choose, the traveler is assured that important elements will not be missed. Roadside viewpoints may functionally limit scenic access by selecting only locations that are easily graded, or where traffic will not be impeded. Another reasonable argument is that visitors do like to follow in the paths of artists or photographers whose work they admire. In the process, they may gain a better understanding of the motive behind a specific artistic composition or appreciate the level of artistic skill necessary to portray complex landscapes.

Despite these arguments, overdependence on fixed views do not permit realization of the ultimate dimensions of any visual landscape. Like the architecture of a great building, the natural architecture of a landscape must be experienced by moving through its rooms and spaces, by climbing up and by going in. There must be a perceptible plan in the arrangement and order of elements. There must be adequate time to see the major structural parts, and to perceive from a distance, that the quality of structure and the sense of its plan and arrangement confirm the qualities experienced inside. To borrow language from the architect, there must be opportunity to see that the landscape "reads". Readability is a confirmation of the natural order and structure which is must be gained from experience and education, and which is unobtainable when vision is limited to snatches or glimpses.

Perception and Movement in the Spatial Landscape

For full appreciation and understanding of the visual resource, observers must move freely through the landscape. This implies motion through both time and space.

To traverse significant spatial landscapes requires substantial time. The experience may mean discontinuity--time over one day, several days, or over the period of several

visits. This gradual process permits development of an incrementally accumulated memory development. In yet another dimension of time, there is frequent need to compare one's current experience with similar experiences from the past. Perhaps this should refer to a fifth dimension; the dimension of memory.

A scientifically validated theory to account for the compexities of vision experienced in motion over time has not yet been developed. Few works on perception treat the subject in any detail. Perhaps this may be explained by the assertion of many psychologists that depth and space cannot be perceived directly, that the two-dimensional retinal image contains only cues to three-dimensionality.(Braunstein, 1976, p 13) The explanation for the persistence of this view may lie in the fact that controlled laboratory experiments in perception require controlled conditions. By contrast, observers rambling on individual patterns, walking or strolling, would encounter loose and changing conditions, certainly not controlled.

On the other hand, recent progress has been made, bringing visual perception theory more reasonably in line with our general understanding and acceptance of ordinary vision in our living environments. The psychologist James J. Gibson (Gibson, 1979) takes the position that vision and perception requires more than simply eye and brain:

> "I shall suggest that natural vision depends on the eyes in the head on a body supported by the ground, the brain being only the central organ of a complete visual system...When no constraints are put on the visual system, we look around, walk up to something interesting and move around it so as to see it from all sides, and go from one vista to another."

Gibson prefers to regard perception as a function of the human moving in his environment. Most of us would consider Gibson's words an apt description of the way in which we ordinarily walk around and absorb the details of our visual world; a description of the way we actually see. Gibson's illuminating views are one foundation for the approach taken in this report.

Three-dimensional space in the visual landscape may be thought of as a complex and interacting set of visual possibilities. Scenic places capable of arresting the attention of viewers are most often separated by stretches of ordinary landscape. It may be more accurate for our purposes to describe the interested observer in such landscapes as one who moves from one point of interest to the next; between these points is a period where relative inattention provides a rest from visual concentration. Despite this oversimplification, we do take in a constant flow of visual data on our surroundings, occasionally marking items of interest that catch the eye. The common phrase, "catching our attention", fits perfectly.

Everyone drifts through landscapes in a manner consistent with their need to see or to gain essential information. That may be a simple need to find out which way to go, to look for high ground, find water or to get back on trails or roads after side trips. If one is attentive to the surroundings, and open to the simple pleasure of free scenic enjoyment, more may be absorbed and more frequent pauses are likely. Interest provides the opening to visual quality in one's immediate environment. To such a deeply interested participant, the portions of ordinary landscape appear smaller with respect to fresh and valued sections. In this way we can describe the landscape of expectations. (Tunnard,1978, p 32). For the traveler in a hurry, his environment is fleeting; left unexplored on the fringes of attention. It is amusing to watch the tourist who completes his scenic duties by leapfrogging fitfully from one famous prospect to the next. In contrast is the frequent appreciative hiker whose eye seems continually searching out interesting relationships; intent on the flow of a landscape that seems worthy of his time.

At high speed, greater importance is placed on the clues to direction that are part of the landscape itself, and on the specific signs which may indicate turnings or connections. At high speed, attentive to the requirements of safety, the decision process must function unhesitatingly and accurately. Consequently, the scenic experience must necessarily be limited to major elements, vivid contrasts, or unique configurations. (Appleyard, in [Lowenthal, 1967] p 67).

experience must necessarily be limited to major elements, vivid contrasts, or unique configurations. (Appleyard, in [Lowenthal, 1967] p 67).

Memory and visual structure

In Newell and Simon's book on human problem solving (Newell and Simon, 1972) considerable space is given to a review of the function of long and short term memory. In particular, arguments examine the experimental evidence that the visual system and the mind function in broadly consistent ways for all persons. Briefly, this evidence suggests that we function in the visual world employing an internal mechanism of symbols. This is mental shorthand representing in a simpler fashion, the complexity of what is seen. These symbols are formed in milliseconds from the flux of stimuli. What we see in a given moment is stored symmbolically in short term memory, but it is clear that only five to seven such symbols or "chunks" can be retained at one time. Thus we must depend upon long term memory to reinforce the process, as a library provides factual information according to need.

The evidence that it takes considerable time to absorb images we wish to remember is of great interest. In this process we require conversion of visual stimuli into symbols. This is accomplished quickly and automatically, filling short-term memory. To facilite similar symbol storage in long term memory, experiment shows that the process requires deliberate and conscious effort. It requires that we look intently at something over a period of time much longer than that needed for short term memory. (Boulding,1961,p236)

This evidence suggests that the person moving in his environment will not look intently at everything. Rather, there is scanning to isolate larger and possibly simpler elements that can be represented symbolically in short term memory. The elements seen can be recognized with the aid of short-term memory, or given meaning by validations from our store of long term memory symbols. When the visual element is

familiar we can absorb it quickly and accurately--in terms of our symbol making ability. When objects are new and strange, it requires a period of concentrated attention and an act of will to absorb their characteristics and to remember. We may need that elusive memory. As Parmenter puts it, "...you don't get stuck in seeing if you have a large stock of images..."(Parmenter, 1968, p.91)

Newell and Simon also note the existence of what can be called "single-mindedness" in action. It is clear from extensive experiment, that the mind can only work effectively on one complex task at a time. If we are moving, an important and complex task is to keep track of where we are and where we are going. To do this we can use our visual system to observe the possibilities in various lines of movement, and we can use experience stored in long- term memory to evaluate the safest, fastest, and most potentially interesting path. But, because of the organization of the mind in solving the problem of the moment, we are primarily engaged in the act of moving, with all that implies. We see only that which we need to see in order to walk, drive, or shift position.

Certain movements such as walking become habitual and practiced. They demand little attention and we are free to see more of the environment. On a bicycle, the hazards are greater. By moving slowly we may need to absorb relatively infrequent visual clues to our direction, footing, or immediate hazards. There is time to enjoy other aspects of the surroundings. We will be able to divert our attention quickly as needed when hazards are registered, or slow to note an attractive cliff or stream.

As speed increases, as in an automobile, the rush of visual events prequires that we simplify the visual flow in order to see enough in the time available. Hence, the flow is reduced to the very simplest of essentials, recognized symbolically. We register hills, open spaces in wooded land, the flow of the roadway, and approaching vehicles, but not the details of foliage that permits name recognition, nor the nuances of color and grain that identify rock or ledge.

Motion requires of us a recognition of where we are going and where we have been. We need to know if we have arrived. One of the attributes of human problem solving described by Newell and Simon is the requirement that we have goals. Goals are necessary to decide two things; where we are heading, and whether we have arrived. The idea is simple but the implications are striking.

A common goal of the landscape tourist is to see "it". In other words, there is a desire to experience the physical extent of a landscape, perhaps to describe it to neighbors after the trip. "It" is some mental structuring of the anticipated landscape constructed from a variety of sources; perhaps the enthusiastic accounts of friends. In a more practical sense, the desire is to see only enough to satisfy a limited curiosity. The limit placed on any goal is a personal thing, but the goal must be there in order to decide, eventually, that the goal has been reached.

Nothing prevents changing goals, or adopting new ones. Newell and Simon have theorized that the process of perception takes place within the framework of an environment, that a goal guides the manner in which we perceive things and reduce the staggering complexity of all possible visual fields to those needed in realizing that goal.

Gibson refers to the perceived shape of the environment in a simple and practical way as "the layout". In his Theory of Layout (Gibson, 1979) he asserts that perception begins with a direct perception of this layout; that there is sufficient information in ambient light for the perception of this environmental reality. He further asserts that the classical "cue" or clues to depth that we are accustomed to in the two-dimensional image are unnecessary to the realization of three-dimensionality; that the eye "picks up a sequential transformation, not a form...". He continues by asserting that perception does not begin with form perception as early researchers theorized. Gibson's recent work suggests that it is the nature of perception to see invariants in a constantly changing array. For example, if we can detect a mountainside and the sky

as invariants, the changing visual array of moving cloud, cloud shadows on cliffs, and their attendant motion is readily accepted. The parallel probability--that the color of the sky or the surface texture of the cliff are secondary--may help us in organizing our thoughts about primacy in visual study. His theory can also explain much about man in motion in the landscape environment. (Gibson, 1979, p 304).

Study of landscape to this point has depended upon the idea that we see form as we look at the world. That means in the simplest interpretation that we see or interpret the form which objects cause to be projected upon the human retina through the agency of light reflection. This form has color and texture, sharp edges or blurred, appears large or small depending upon distance, and may be bright or dull as well as many other things. This retinal image is what is interpreted in the process of vision; many experiments designed to study the process, validate theories, or examine inconsistencies are based on this concept.

Gibson's view is less restrictive; that what we see is not form, but the form transformations taking place with motion of the eye, the body, or elements in the landscape. It is these transformations perceived by eye and brain that are important sources of information. They tell us what we need to know about distance and speed of travel, they clarify the meaning of hidden areas that are not visible from a single point of view, and they permit a kind of shorthand that allows selective reception of the most significant information from the very complex total flow. To appreciate these transformations implies that we are readily able to gain an idea of the plan of things in the landscape through an understanding of relative size and position. This is a probable meaning behind his assertion that "the perception of surface layout is direct." (Gibson, 1979, p 148). From this, follows our perception of the transformations; the dynamic expression of the moving observer, alive in a live and dynamic landscape.

This reasoning fits reality in a mannner that is consistent with the commentary of

careful landscape observers. Appleyard speaks of the observer's need to orient himself in the environment through which he moves by locating the principal features and relating himself to them. Also, he speaks of the pleasure in achieving measurable success in the act. (Appleyard, [in Lowenthal, 1967] p. 79). Appleton suggests in his Prospect-Refuge theory that "...spontaneous appraisal of the environment must include some assessment of the opportunity for movement...". This movement he refers to obviously requires visualization of the transformations that would take place for a person following potential movement paths. (Appleton, 1975, p 118).

Personal space in the Spatial Environment

The observer's landscape environment, to apply Gibson's definition, is a succession of spatial shells or enclosures that a person perceives when moving around. Newell and Simon assert that all human problem solving takes place in a mental environment of our own creation. (Newell and Simon,1972,p.212). Therefore, reducing our current environment helps us be effective in selecting the best problem approach.

Starting with this idea, it is reasonable to assume that the whole of our immediate landscape environment is too large and too complex to be perceived in detail for each problem; as an aid, we form a shell, or local space, scaled to a specific problem-solving instance. Higuchi suggests: "A physical spatial enclosure can keep man from dissolving in the midst of things that are not essential...".(Higuchi , 1983, p182). For example, if our goal is to walk down a road to a bridge, it is reasonable that we might limit this shell to the road and the field it traverses, as bounded by woods or ridges. Interesting local objects--trees growing by the roadside, or a patch of color--may become part of the whole. Such a shell, or perceptual problem environment, is now appropriate to frame necessary short-term perceptual activity. In this example, our goal is the bridge; walking purposefully in the right direction enables us to reach that goal. Once there, a new environment is formed in perception, suitable to our next objective. This dynamic process enables us to move at will in exploring a new

landscape, and to shift attention from one local perceptual situation to the next in tune with the pace of our movement and the degree of attention we desire to fix on a given place.

In order to organize a succession of spatial events, it is necessary to develop a broad idea of a larger enveloping environment. In Newell and Simon's terms, such a large-scale structure represents a separate problem situation; the problem of finding an overall organizational layout. To assist us in this, we may visualize maps, observe distant landmarks, or note the evident extension of a valley up which we are progressing. It is reasonable that, as we move about, we shift back and forth between personal spatial environments of varying scales, each suitable to the particular problem of the moment. First, the large scale--to get our bearings--then the local scale, to guide exact movements, avoid obstacles, and perceive visually interesting details.

At this point, let us refer parenthetically to the ground we are traversing as the "floor" to denote the accessible surface upon which we walk to explore landscape space. It is a term previously applied by Litton (in Krutilla, 1972), and by Gibson (Gibson, 1979). It may be defined for this study as the portion of the ground where easy movement takes place, as distinct from steeper side slopes, rocky outcrops which impede our progress, or areas of brush or undergrowth where both visibility and passage are difficult.

To test the concept of the shell or local problem solving space, it is instructive to reflect upon what we would do in passing through a specific landscape, one that is familiar enough to be remembered, perhaps the landscape of one's work environment. A good part of the structure of such recollection is likely to be spatial; clearings in a wood, the space of a street; the linear space of a path, corridor, or underpass. The attempt to remember leads to the visualization of a succession of spatial worlds, structured by their interconnection. Within Newell and Simon's definition of a convenient work space, we can infer that the spatial environment of a street forms a

spatial world far different from that associated with a quiet path across the campus, or a stroll by the river. The energy expended in dodging traffic, judging obstacles, watching carefully for traffic lights and approaching vehicles, and noting safe crosswalks--all impinge upon our consciousness to create an operative space far different from the relative peace of the campus stroll.

The street or highway is the automobile driver's spatial structure as suggested by Appleyard. "...the driver is engaged in orienting himself to the envirorment, in building up some image of it. Movement along the road consists of a succession of approaches to goals, which may be prominent landmarks, focal points, or other paths to be at tained. By them he measures his progress and foretells his future."(in Lowenthal,1967, p 79).

The concept is echoed by Beck, "The progressive delineation of forms in space is a basic part of [the developmental articulation of self with environment]...Spatial reference and orientation systems...are not mere geometrical abstractions but meaningful properties of individual environments." (in Lowenthal, 1967, p. 18).

Ittelson, et al (in Wapner, Cohen, and Kaplan,[eds], 1976,p 199) lists four characteristics of environmental experience which fit Appleyard's argument: 1. Orientation, or finding one's way. 2. Developing a taxonomy for thinking about environments. 3. Analysis of contingincies to produce a predictive series of events; the individual seeks out those related to his own goals 4. Purposeful action; getting there.

During the course of work for this report, I made several trips. In recollection, these trips may be structured by describing the travel days as "getting somewhere", and "being somewhere". They are perceptually different.

Getting somewhere implies an origin, a destination, and the practical means for going.

Time is an organizing factor important for longer distance travel. When "going", the chosen route, its direction, surface quality, traffic impediments, and its available food and fuel services must be structured into a reasonably predictive timetable. To arrive at B, one must leave A at some chosen moment, speed along at a reasonable and safe rate, account for needed stops and rests, and get there conveniently. To the tired traveler this probably means a time when restaurants are open, or when motels are available. The road map can serve as a mental image of this general travel plan, referred to from time to time, as one encounters disorienting turns in the road, or when one's previously formed mental image of the landscape does not correspond with the reality of what is seen.

The route that one traverses when "going" may recede in consciousness to a succession of barely perceived open and closed roadside fields or woods. Details, especially on a long and fatiguing journey, are subdued; subservient to a mental version of the actual road map, or to the hypnotic ribbon of unwinding pavement. The goal is getting there, and energy is expended commensurate to the distance, leaving less for active and pleasurable observation. As highway designers have pointed out, long distance travel can become dangerous when the need to arrive blots out roadside details, and when the route is visually lacking in interest.

In travel, "being somewhere" can be quite different. Here the scale of space and one's successive goals can be spontaneously generated by the attractions of the landscape, by the pull of distant elements, by the lure of a river, an sheltered picnic spot, or an charming shop. It is often attractive to get lost; to avoid planning destination goals and to let the events of the landscape generate the form and timing of one's travel route.

If one has traveled a road before, memory comes into play. We may recall a particularly pleasant picnic stop by a stream; by adjusting the schedule, one might enjoy a similar experience again. Remembering a unique grove of pines in a canyon

could suggest a short detour to see them. The time of day or the season may be the trigger for starting later to avoid hot sun on a desert traverse, hazardous road frost in winter, or traffic congestion near towns. All these elements, and a myriad more, coalesce in our mind's eye to enrich utilitarian lines on a printed map.

For the times we feel adventurous--and risk a new route--memory works in concert with imagination; we create a degree of risk and avoid over-dependence on experience. Now, we use our ability to visualize things that are known but not previously seen. Such images, ornamented by reading, the enthusiasms of traveled friends, or our long-held conceptions of a place--right or wrong--serve as an interesting measure of the landscape as it unfolds. The trip will serve to verify our stored preconceptions. If we have developed our travel plans carefully and anticipated the landscape possibilities, we may find pleasure in discovering how true our thoughts have been to reality.

With old routes, we are partially controlled by expectation; we may lean forward, hoping that a remembered landmark will appear around the next corner. When it does not, we may hesitate--lost in confusion, or backtrack, sometimes fruitlessly. At times uncertainty will cause us to miss what a receptive mind may have permitted us to see. It is a curious fact that repeated old journeys can lead to puzzling disappointments. We are disappointed to have forgotten the details that once structured most of the route. We can remember the steepness of the mountain gradients and the car boiling over, but readily forget the charm of old buildings along the way, or badly judge distance. It can be frustrating when the aid we had expected from memory proves less than perfect, and in consequence, we have missed what might have been. (Parfit, 1984).

Mental Maps and Landscape Orientation.

Extending beyond their usual topographical and social world, Geographers have become concerned with the world of the mind. Specifically, they are interested in the the fact that people do not perceive the geographic world in a simple and predictable manner. Rather, Navajos and Italians, Lapps and Canadians--all of us--have traits of culture and personality that color our landscape perceptions. And it has been found that poorly educated, elderly, minority groups have special tendencies and limitations with respect to finding their way about, a problem not invariably shared by others.

If a representative group of people are asked to make a map that shows their home, their work place, and their favorite connecting route, research results indicate that logic and the shortest distance do not always determine a favored line of travel. Many factors are capable of altering the shortest point to point path. Some relate to urban fears generated by run-down neighborhoods. Dangerous streets are high on the list of elements to avoid. Cultural preferences will be the catalyst for routes that include shopping, services, and opportunities for meeting friends in one's cultural group. While these factors are typical of city environments, if they are capable of affecting urban mobility and developing route preferences, similar forces are certainly at work in the landscape environment.

It has been shown that newcomers to a city develop a mental map that is sharply limited. It is not comparable with conventional and formal road maps. (Goodey, 1974, p 24) Formation begins with the personal events that lead to later familiarization. One's first entry point to the city--perhaps a subway station--could be a key element. From that beginning the map grows; elements such as streets leading to shopping areas are included. Later there are connections to house, school, or workplace. The initial mental map is very simple; only enough to provide essential guidance. Later as familiarity grows, it becomes more complex, and simpler landmarks may be chosen. In time it changes to suit current preference and favored routes.(Parfit, 1984).

Cognitive maps appear to make great use of landmarks; elements easily recognizable in a complex environment. Such landmarks link route sections that are not yet operationally familiar-- that do not yet have their own keys to recognition. As in the landscape, landmarks function efficiently to provide pivot points about which much unstructured movement can take place. If one can keep the relative position and direction of the landmark clearly in mind, one may venture more comfortably and safely on new routes to develop a finely tuned eventual understanding of the whole.

These findings from the study of cognitive maps can be applied to isssues of landscape structure. Simple buildings of a landmark nature, and clearly delineated streets are often part of such maps; there is a direct parallel with the memorable simplicity of simple and bold rock forms, prominent topographic landmarks, and striking water effects. The functions of streets in urban-generated cognitive maps has a parallel in the scenic roads and trails of the landscape. There is also an obvious parallel with the mental structures suggested by Newell and Simon as necessary for normal spatial understanding and learning. (Newell and Simon, 1972)

The Sense of Place and the Landscape

Geographers have recently written about the influence of "place", a term used to denote a position or locality with special meaningful characteristics. Certain of these characteristics may be physical--elements of the landscape--but the majority of writing and comment is centered about cultural, social, and personal meanings. Still, the underlying concept of place is powerful and meaningful to nearly everyone. There are deep roots in time extending to events or persons important in our lives. The places of childhood or home are particularly strong configurations in consciousness. When places are endowed with particular overtones of personal joy, failure, attainment, sadness, or discovery, they assume dimensions out of proportion to their physical position or characteristics. And it is an internal and personal dimension not possible to share with others.

Certain places have dimensions derived from historical incident, cultural significance, or social interaction. These are dimensions that are possible to share with others of our culture. Much can be transmitted through education and cultural sophistication, by personal interchange, or as the result of actual and physical participation in an event. However, when diverse cultures are involved, it is as Benjamin Franklin notes: "Fine musick in China gives no pleasure to the nicest ear in Pennsilvania."

One Geographer favors a more rigorous interpretation of the concept, stating that place can be entirely personal, completely internal--not visible "either to themselves or to others." (Tuan, 1977 p 178). In a second, and wide ranging landscape interpretation, he states: "...place is wherever stable object catches our attention." (Tuan, 1977, p. 161). Whether "place" is always so uniquely personal or whether it is rooted in social and cultural learning, it is a powerful and useful concept that can endow ordinary physical localities with extraordinary overtones of meaning. It is only regrettable that the word is being utilized formally--perhaps even too pointedly; it is such a good and utilitarian word in common usage when it means simply a particular location. However, the importance of the concept of "place" as a manifestation of personal perception is such that we need a term of special significance.

On the other hand, if the formalized meaning of this ordinary word as adopted by cultural geographers is applied to all instances of its common use, then the special meaning we need is affected by that formalism. Alternatively, and worse, such word usage will imply that all perception contains those deeper dimensions of perception that are so uniquely implied in "place". While one might argue that this statment contains much truth, the central problem remains. Since "place" is a term appropriate to the senses, and must derive meaning from personal experience, memory, or education, I prefer Brian Goodey's interpretation which is: "Sense of place with accent on the sense." (Goodey,1974, p 109) This construction permits the useful and meaningful conjunction of sense and place. An added advantage is that it does not preclude the simpler use of the word to signify a particular position or locality.

For the purposes of this report, place will mean location. Reserved in the background is the reality that we all have a sense of place and respond differently; that to some, perception is powerful and moving because of past events or deep personal feelings. For others, excited by being outdoors in natural surroundings, perception in a given locality leads to enjoyment of color and form, or the scale of enclosure and floor. For tired travelers, perception of a place may be shallow, utilitarian, fleeting, disinterested, or dim.

As we attempt to determine the full value of landscape, we must stipulate that the analysis involve values that individuals hold for that landscape. This should not mean that the values and preferences of each individual can be given equal consideration. Evaluation is a social action, existing to range diverse elements in some order valuable to society. In this endeavor, the sense of place presents a valuable dimension connected to societal meanings and preferences, a dimension that can overlie naturral landscape attributes and qualities, endowing them with deeper significance for human appreciation.

Perception and Uniqueness

Each landscape inherits the natural elements that determine its unique visual character; its own enclosing mountains, hills, forest cover, plants, and water. Every land surface is different in detail from every other, consequently, environmental conditions such as surface runoff forces variable effects on populations of the same plant, reaching some and parching others. Soils are piled deep in one place, or are thinned by erosion in another. The wind eddies and flows to favor one forest or lash another. Consequently, the character and form of each part and of all that grows is distinctive; these relationships form its detailed character.

The casual observer, or the hurrying traveler may be aware that the essential details of a landscape appear to be similar to those of another. This similarity is the

basis of the term "landscape Continuity",(Litton & Tetlow, 1978, p32) that defines landscape as an extent of terrain with consistent visual characteristics derived from geomorphology, climate, topographical features, or plant cover. A second term "character type" implies much the same thing but is applied to a more limited landscape example; (USFS Handbook 462, 1974, p 5) p.5). Despite superficial resemblance, no two segments of the landscape continuity are ever identical; each is unique in the nature and arrangement of its details. Each has an unique visual identity. Their detail may be bland and indistinct; visually dull. It may be vivid and contrasty; colorful and exciting. Much depends upon the interest or proccupation of the observer.

Uniqueness has been cited as an important criteria for judging the value and importance of a landscape resource. Leopold has made it a significant element in his study of rivers. He defines "unique" as,"... a word meaning without like or equal." (Leopold, 1968) Examining the words "like" and "equal" in this definition, it would be easy to find that two comparable places on earth are never alike. A careful inventory would yield a list of differences, even though the two examples were outwardly similar. Such differences, expecially when they represent mor or less "universal" characteristics, are helpful yardsticks that can be used to determine whether landscapes are equal, or whether there is a degree of comparability or superiority. That is the task to challenge us.

To present rational aguments in land use policy and in management strategy, visual factors--as well as other environmental factors--must be defined, ordered, and compared. This is an essential step if management intends to communicate its decision structure for periodic public examination and review.The alternative is to make decisions based upon a composite analysis, perhaps an "expert" interpretation of value, or an imperial decision. The unsatisfactory aspect of such composites is the difficulty of balanced input, coupled with difficulties in communication and review. This may conceal the fact that there is occasionally no rational decision process at all.

Creating a Practical Policy

Currently, there are arguments that visual analysis--with its basis in esthetic principles--is complicated and difficult to weave into a practical system; that the expense and time involved in doing so will force the adoption of a skimpy or lopsided skeletal framework. One suggested remedy is to seek out experts and critics to produce evaluations based on their applied experience and interest, and their skill in communicating their train of logic to others.(Carlson, 1977, p 151) Whether or not this is the best alternative, economic reality may force the interim adoption of some alternate system that will merit greater confidence than is now apparent. It is clearly in the best interests of the forest resource to insist on a broader analytical structure. Within this conceptual framework, there must be a more detailed examination of individual visual factors and configurations. In that way, each set of factors may be examined for effectiveness and significance. In the future, this can lead to incremental improvements and greater operative precision, as time and resources permit.

A rational approach requires description and defined criteria for each element and variation of the inventory and evaluation process. Then, if the analysis fails to produce a desired result, the steps may be reviewed and repeated until the defect is identified, the need for variations or additions to the process are made clear, or the desired results are adjusted to fall within the realm of possibility, economic feasibility, and time.

An understandable and comparable scale is operationally and socially desireable. Others have developed sucessful measures for economic value, for production potential, and for making various resource inventories, but what we do not have is a valuation procedure suitable to the visual resource. We need one that is functionally adequate, reasonably and generally applicable, and agreeable to those who must use it--in the field as well as in management decisions. Above all, we need one that will

recognize the continuous and interlocking nature of the visual landscape with the need to maintain regional character.

Present-day research on perception limits the nature of response by fragmenting or simplifying the problem. Using a similar approach to study the visual environment, we have had user response studies based upon controlled views, and photographic representations. The fable which describes the statements of three blind men after feeling an elephant is worthy of thought in this context. Isolation and investigation of variables is certainly the core of the scientific method, and a valuable approach, but current perception science is tightly comparmentalized and limited; does not adequately relate to the reality of ordinary experience. In sum, the complexity and richness of the individual's perception when moving naturally in the landscape defies adequate characterization in the typical present state of the science of perception.

The need for improved management is urgent. At the present rate of resource consumption, our public lands are in process of massive alteration. It is obvious that we shall have to adopt interim planning techniques. This means adopting a system which can not be scientifically validated at this stage in the progress of science. A persistent theme supported by significant segments of the people and by concerned institutions is that our present course is inadequate and that many of our resources are at risk. Although we do have some agreement on the need for reform among present land use agencies,. we cannot wait for the development of a complete and perfect analysis and evaluation system. There is considerable question that any system can satisfy all opposing viewpoints and interests or fit reasonable expenditures of time and funds.

The problem is not limited to natural landscapes that are largely untouched. Ordinary cultural landscapes such as farms, recreational developments, homes, and our city settings are important contributors to the visual environment. Fig. 16. Such landscapes are doubly important because they are settings for the education of our

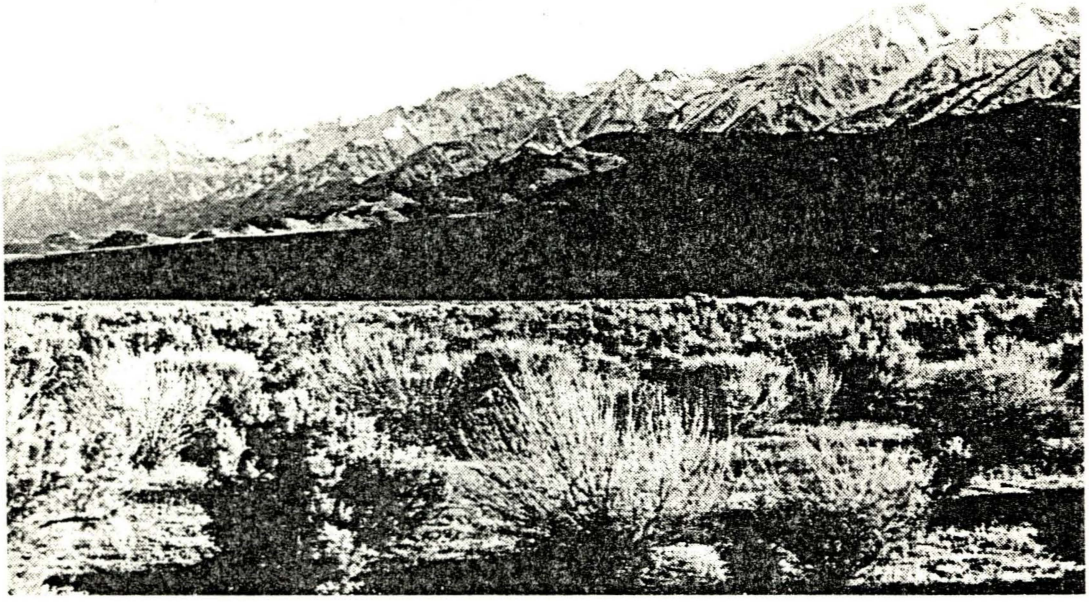
children, and serve to establish standards of appearance that can be a constructive social model. We must insist on urban settings that embody good design, are formed inexpensively, and that can be reasonably maintained. We should recognize this as a community requirement worthy of attention, rather than depending unfairly and heavily on private support. Given the fragmented nature of land ownership in this country, it is unrealistic to expect that the separate and unique ideas of individual landowners can result in a consistent or unified landscape, in any way comparable to this inherent unity provided by natural settings and landscapes. Without some community reform, We shall continue to waste travel time and energy to experience natural landscapes that can touch our inner need for the rational order and tranquility that is seldom part of the deep urban environment.

There is great appeal in the idea that existing trees, land form, streams, and plant cover contributing to visual quality be protected from careless destruction, if for no other reason than to eliminate costly future remedial measures. The concept of urban forestry is founded on such an idea, although there is relatively little solid achievement to show thus far. Tax reform and the present power of localities to issue building permits can exert powerful leverage. If we cannot work that lever or make progress via suitable local ordinance, there will be an accelerating drain on public land to compensate for recreational and scenic needs and this will simply increase the severity of present multiple-use conflicts.

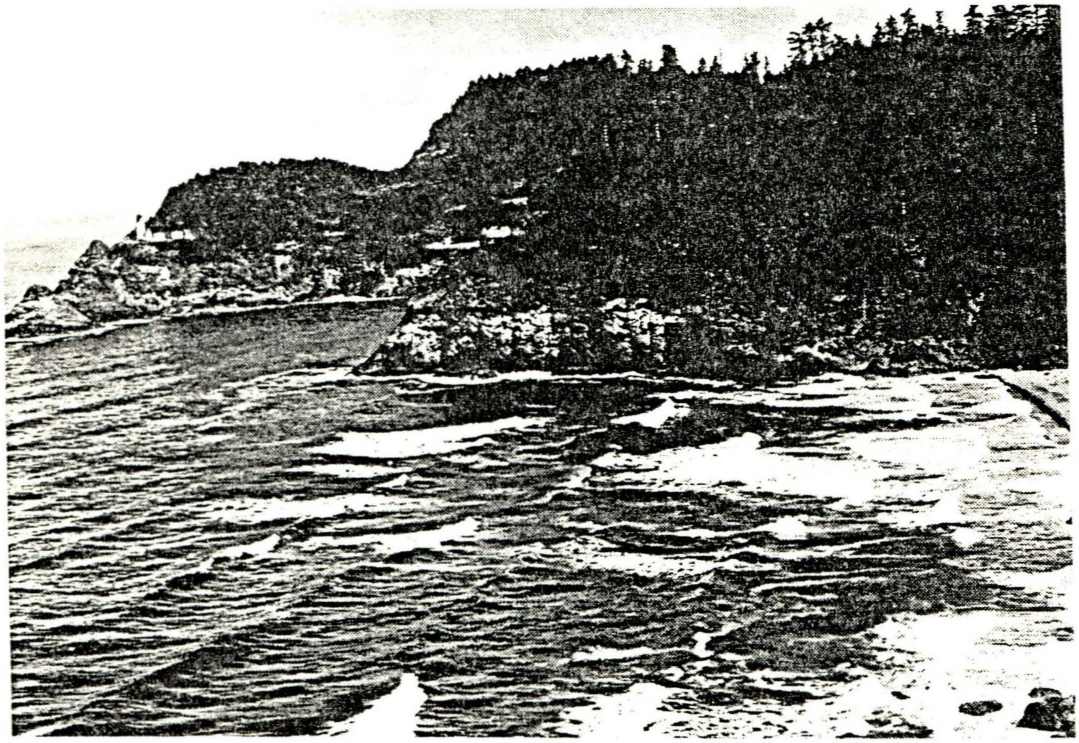
The problem must be attacked on two fronts. Of primary importance is the inventory and identification of strong and unique land configurations that are scenically important. These must be placed in a context or order of importance, proceeding from the standpoint of both scenic quality, and potential for maximum public benefit. The obvious objective is to conserve, on our public lands, significant scenic resources of a type which requires relatively small economic investment in order to generate significant and disproportionate advantage. Of parallel importance is a similar analysis of impacted land. Here the objective is not primarily conservation, but recognition of

those landscape configurations which can form the basic structure wherein relatively small economic inputs may generate truly significant gains.

Today, timely, intelligent, and determined planning can conserve significant portions of our present remaining quality landscape. This can be done with comparative economy,rapidity, and and assurance. For the improvement of presently developed areas, much will depend upon the willingness of the public to devote resoures and time to the task. That will depend upon sensitive and capable design, not upon the inherently positive qualities of a good public landscape.



17. Limitless and pristine



18. A reservoir of possibilities

Recent History

Before 1940, our national forest lands were perceived as reasonably intact. Poor highways and forest roads, unreliable automobiles, a less affluent population, and reasonable demands on resources, were all stabilizing forces. Unlike conditions today, there was less reason for the public to perceive possible future difficulties. Many saw the National Forests as limitless and pristine. Fig.17. Indeed, the results achieved by the forest recreation construction programs of the Civilian Conserrvation Corps in the late 1930's did much to foster the image of the Forests as ideal places to seek respite from urban stress and clutter. The simple and clean facilities built, under the seasoned design direction of landscape architects and engineers in federal service, combined the qualities of hand fabrication techniques with substantial construction materials of timber and stone. The unity of style, the quality of craftsmanship, and the suitability of materials was high. Compared with recreational facilities offered in most localities, these new and welcome additions to the forest landscape were seen in a postive light; perfectly in tune with the concept of the National Forests as a great reservoir of possibilities. Fig.18. And these facilities were a model for modest siting and architecture in a predominately natural setting, attributes not often matched in country towns; rarely in cities.

A second and different level of CCC activity, that of surveying, road construction, and bridge building made it much easier to plan and execute rapid expansion of resource development. The forthcoming but then unseen need for lumber products to support the growing war effort was far easier to satisfy with such improved access to forest lands. That wartime need and the resulting timber cuts altered forever the illusion that our forests were without limit. The shape of the future became visible.

However, it was not until 1960 that the provisions of the original Organic Act were expanded. The original ideals of forest and water supply protection, and timber

harvest were expanded to include recreation, fish, and wildlife protection, although it was explicitly clear that these gains must be achieved without impairment to longterm timber and water productivity. The broad language of this expanded legislation made it clear that management could continue the right to balance requirements when necessary, to conform to changing needs. It was explicit that not all of the lands need provide for all the above uses; in certain cases for example, there might be no recreation, if it were administratively clear that timber or water supplies would be endangered or hampered. Happily, the legislation explicitly permitted a managerial interpretation that might lead to a diminished dollar return or a smaller output, provided that the broad purposes of the act were otherwise achieved. It should be said that, in the preponderance of cases, foresters have proved to be as concerned with the full range of forest values as others, but have been restricted in their options by political and high level administrative actions. But in sum, the effect of the 1960 Sustained Yield Act was to weave additional elements into the protection goal, without altering management prerogatives for the complex resource or without using language that diminished the apparent right of interested parties to lobby for their own limited objectives.(Alston, 1972, p 30)

This legislation was followed in 1964 by the Wilderness Act; a response to the growing public realization that the amount of land still reasonably intact was limited. Important segments of the public were forceful in arguing that wild sections of landscape and forest needed to be permanently protected--as many high quality landscapes were protected by National Park status--from the consequences of short-term administrative action. A primary argument fixed on the premise that even a minor amount of justifiable resource utilization, taken together with its attendant infrastructure, would destroy remoteness and inaccessibility; important wilderness coditions. A second argument, stated persuasively in the environmental essays of Aldo Leopold stressed the scientific need to retain an adequate reservoir of land protected from modern pressures; land that could serve as a basis for comparative measure into

the future. As Leopold warned: " The ordinary citizen today assumes that science knows what makes the community clock tick. The scientist is equally sure that he does not. He knows that the biotic mechanism is so complex that its workings may never be fully understood." (Leopold, 1966, p 241)

Land managers in the Federal government had been agreeable to the concept of wilderness. Actually, many sections of public land were only marginally valuable for timber or grazing. Wilderness classification would be justifiable cause to limit and control public access for the benefit and protection of watersheds. There was also justification to avoid building roads near to designated wilderness areas and this could help contain tourist pressures. What was far less agreeable was the new trend toward permanent wilderness status. This removed the traditional managerial prerogatives to alter the classification of areas as needed to meet congressional mandate or changing demands for increased production of timber supply, potable water, or minerals.

In 1969, the National Environmental Policy Act,(NEPA), expanded the responsibilities of the Forest Service and other federal agencies. The Act required that presently unquantifiable environmental amenities and values important to "...productive and enjoyable harmony between man and his environment." be given appropriate consideration in decision making. The act required that each agency in government develop methods and procedures to describe and quantify the factors appropriate to attain this directive. More than this, each agency was required to study, develop, and describe appropriate alternative courses of action, when unresolved conflicts between resoure utilization remained.

This key legislation was followed in 1973 by additional efforts to identify roadless areas of the National Forests. The Roadless Area Review and Evaluation (RARE I) program followed, eventually to result in heated public discussion and criticism. The controversy led to the program's extension and modification in RARE II.

During the period following the adoption of NEPA, the Forest Service revised its manual of operations. In support, it produced the first of several Handbooks or manuals needed to describe the methods and procedures that would be used to expand the management requirements mandated under the act. The first of these, The Visual Management System was ready for distribution at a crucial moment.

Earlier, also in 1973, The Endangered Species Act sought to provide additional formal protection for endangered wildlife species. That Act mandated the conservation of ecosystems vital to the continued existence of such species, to a level of reasonablel expectation that the species might survive.

In 1974, the Forest and Rangeland Renewable Resources Planning Act required that all forests and rangelands in the United States be included in an inventory and assessment aimed at the identification of potential supply and demand factors. This was to be an interdisciplinary effort and would include intangible, as well as tangible considerations. The Act called for periodic updating of the plan at five-year intervals

The Visual Management System

The Forest Service response to the obvious need for improved planning for scenic and visual amenities was to institute a comprehensive inventory and analysis procedure. This effort culminated in a Handbook, No. 462, that described the Visual Management System. This handbook was issued as one of the first of a projected series. A salient feature of the methodology described in the Handbook was the requirement that all forest land would be given a minimum level of visual quality, since it was all visible in some degree to hikers and those in aircraft. This is an important provision in the light of the actual procedures to be followed, as we shall see.

The inventory process subdivided each forest into broad character types for primary identification following the physiographic classification system proposed by Nevin M.

Fenneman in 1931. Because many of these primary subdivisions are very large, the handbook proposed that four subtypes of importance to visual values be created, to be used to more accurately represent smaller landscapes within the larger Character types. These are: Gorge Lands, Steep Mountain Lands, Foothill Lands, and Rolling Plateau Lands.

In a second step, the inventory creates, as an overlay on the Characteristic types and subtypes, a classification of Variety Classes. These are mapped using graphic plotting techniques, and include three classes: A--Distinctive, B--Common, and C--Minimal. Their titles suggest the nature of their visual quality and scarcity; the handbook provides guidance for specific classification via a table describing each of the classes. For each Variety Class, the handbook table describes the higher and lower possibilities of visual value for Landform, Rock form, Vegetation, Water Forms and Lakes, and Water forms; streams. These are the visible elements of the landscape that are most influential in creating attractive and scenic views, and are, it is not surprising, the elements used by most writers on the subject. The principal criticism is that the inventory is fragmented; no attention is paid to the unification of visual elements into meaningful landscapes. Accordingly, changes in the degree of slope form the major boundaries of the variety classes, and larger subdivisions of the environmental landscape, such as large valleys, or what is described in this work as Visual Units, remain in the operative background.

A third major part of the inventory and analysis has proved the most controversial. This requires the subdivision of forest land into mapped extents that reflect the sensitivity of viewers to the perceived landscape. Stated in another way, it reflects the estimated sensitivity of viewers to modifications that may be proposed; management procedures that would obviously reduce visual quality. The process has two important interlocking steps. First is the analysis of all travel routes, use areas, and water bodies to determine their importance, characterised as Primary or Secondary. Primary classification suggest national importance, high use, long duration

of use, and size. A subsequent step assigns a Level 1,2, or 3 to the user's Sensitivity, with Level 1--the highest--assigned to landscapes seen from Primary roads, resorts,and recreation areas, or from communities where the population is not directly employed in forest- related work. Level 3--the lowest--is assigned to all forest road systems, minor recreation sites, poor fishing streams, and all land not seen from any travel route, use area, or water body. This criteria appears to ignore areas seen only from the air.

Mapping of Sensitivity levels is complex, but is based upon the primacy of view perimeters as seen from roads, water bodies, and recreation facilities. These are subdivided into three viewing distance zones. All this is then graphically presented as mapped overlays so that the relationship of Sensitivey Levels and viewing distances can be studied. Some areas might be seen from more than one location and over more than one distance. These overlaps produce a rather complex set of graphic representations that are suitable to long-term management through familiarity, but which can be difficult to understand in the abstract. The final result is a map intended to reflect the visual importance of all parts of the land area that is seen from roads and recreation places, and indicates which parts are likely to be subjected to the most intense and frequent scrutiny by travelers, recreation seekers, or local residents.

To repeat, the procedure begins very broadly, with Characteristic landscapes of vast extent such as the Coast Range in Oregon and Washington; one such physiographic Character Type. Within this, Gorge Lands, Steep Mountain Lands, Foothill Lands, and Rolling Plateau Lands can be identified as subtypes to construct a finer-grained frame of reference. Within this broad framework, the Variety classes mark the incidence of steeper slopes, exposed ridges or features, forest cover with some pattern, and water in lakes and streams. These factors, simply and briefly described, form the basis for placement in the proper Variety Class. In the end, the inventory is dominated by the Sensitivity Levels, a complex analysis that embodied assumptions on how the landscape is seen and by whom.

The work accomplished to date has been questioned by the public and the courts. The principal issue most often heard is that of the Sensitivity Levels and the premise that varying groups of the populace looked at the visual qualities of the landscape from a self-interested point of view. Critics have suggested that this part of the analysis be redefined.(Lee, 1976). Sensitivity levels also placed a considerable premium on what could be seen from existing roads; less on remote sections of the forest lands, an important issue for current operating plans.

Other Approaches and Systems

Gathering ground in the visible worldwide aftermath of reconstruction following world war II, governmental agencies in several countries, and many individuals have advanced proposals for a systematic appraisal of scenic values as an aid to rational planning. Among the most significant of these was a 1968 article in a Scottish Geographic Magazine proposing that scenic values could only be effective in planning if all of the land resource were studied and differentiated, using physical charactistics important to scenic value.(Linton, 1968). Linton's two critical characteristics were "...the form of the ground--not as defined by the contours of the topographical surveyor, but rather by the landform catagories of the geomorphologist. The other is the mantle of forests and moorlands, farms and factories, natural vegetation and human artifacts, by which the hard rock body of the landscape is clothed. Involved in both are the water surfaces, running or still, salt or fresh, natural or artificial, that enter into many of our most attractive landscapes." Including the importance given to water, Linton really was using three major characteristics.

Linton distinguished six catagories of "landform landscapes" ranging from "Lowlands" to ""Mountains". Arguing that mountains had the ability to evoke greater scenic interest than did less exciting topography, he applied a numerical rating scheme to each of five catagories, disenfranchising the lowlands by considering them "intrinsically tame" and giving them no score value. He agreed that water features of various sorts could be given extra points in relation to their quality and situation.

An appropriate feature of his approach was the consideration of cultural landscapes to scenic resources, claiming that "It is through his utilization of lands that man makes his contribution to scenery."

Linton produced a map for the whole of Scotland by overlaying a map of his six topographic types in combination with a second map of his Land- Use or cultural landscape types. This composite was "...offered as the first Analytical representation of the scenic resouces of Scotland." This map did not record data on the extra value of water features, or the extra valuation which might be placed upon distinctive physiographic accents, although Linton emphasized that these were important characteristics and should be dealt with in a comprehensive test of the method. Since each factor had been assigned a numerical rating, the map could be shaded to render the combined score distinct by graphic means, thereby creating a map of scenic resource values.

The importance of Linton's approach is that it describes a method for producing a generalized map that could form the basis for planning policy. There is much to be said for this type of product; most of the work of planners and designers involves maps and overlays which could work well together. There has been both commendation and objection raised to Linton's classification and criteria (Gilg, 1974) suggesting that the broad scope of the method is an attractive aspect needed for more comprehensive planning.

The Visual Unit Concept in Development

The concept of describing a unit of landscape similar in extent to what is perceived found an early place in the work of R. Burton Litton, Jr. In a study of Lake Tahoe and its surrounding landscape, with Kenji Shiozawa, then of the Forest Service, (Litton & Schizawa, 1971), Litton described and plotted such divisions. Most were comparatively limited in extent when related to the size of the Lake Tahoe Basin and described significant subdivisions of the Lake shore landscape.

In a subsequent study of water in the landscape produced for the National Water Commission, (Litton et al, 1971), this theme was extended. Tthe concept of the Visual Unit was related to larger units of the extended landscape, large enough so that they could not be immediately seen from one point. And there was a clear implication of time needed to gain a full appreciation of the landscape qualities over a large land area.

Proceeding from the ideas developed in the above two studies, a study commissioned by the government of the Province of British Columbia, (Tetlow & Sheppard, 1977) extended the concept to the point of making it the basic mapped inventory unit. Applied to the whole of a tract measuring more than 8000 square miles in extent, it permitted examination of the visual characteristics of all of the ground surface, using aerial photographs followed by ground verification. A scale of comparative values was developed that enabled the planners to weave comparative visual quality measures into a fabric of planning that involved foresters, wildlife and recreation specialists, town planners, resource developers, and many others. This was accomplished very economically using limited manpower. That fact, plus a result that gave good informal correlation with perceived values on site has led to my wish to extend the work and attempt to broaden the specific factors used. These had been understandably developed to suit the character of a Northern landscape and could not be reasonably applied in other latitudes, seacoasts, or desert landscapes. Accordingly, this study forms a restructuring and extension of the work begun in British Columbia.

That work owes much to my colleague, Stephen Sheppard, who was a fountain of ideas and conducted most of the site verification work in the field. It also owes much to the cooperation and interest displayed by members of the Canadian Government team members, and by professional and governmental staff.

Of greatest importance, the hand-on experience gained in applying the analytic standards of that study suggested the value of continuing and extending the Visual Unit concept as an economical and viable approach to visual and scenic analysis in other places.

The Visual Unit: an expnded Concept

For this study, the Visual Unit is a concept that defines a visually unified and spatially bounded segment of the extended landscape. Its visual quality is founded primarily upon four broad classes of elements: enclosure--particularly elements and configurations that enhance the sense of space; the floor or ground surfaces within the unit; forest and plant distribution on the ground; and water elements. These four classes of features may each be subdivided into distinct and identifiable natural and cultural characteristics and detailed attributes that can be used to construct a more complete description. This description is the basis for examination and comparative evaluation of scenic quality for each unit. The details of these elements and their descriptive attributes are illustrated by drawings in Appendix A.

The Visual Unit is intended to be the primary subdivision of land used in comparing the visual importance or distinction of the various units within a management jurisdiction, a region, or several regions. Since topography is the primary limiter for setting boundaries, it is probable that non-design technicians familiar with surveying or mapping can conduct an initial locational survey, and establish preliminary visual unit boundaries on planning maps with good success.

The essence of the concept is that <u>all</u> land within an agency jurisdiction is to be apportioned into scenic units. Whether it is seen from one point or another, or from roads or recreation areas, or is only seen from trails, or is so inaccessible that it is rarely approachd, is immaterial in this initial phase. In other words, once unit boundaries have been established, there will be no areas left outside the study area. It is then possible to produce an evaluation or rating for each unit and to use that data comparatively during subsequent steps in the planning process, including that of validation by agency specialists, by management, and by various interest groups from the public sector. Beginning in this way, it is possible to produce an comparative evaluation or rating for each unit that is a measure of its broad visual strengths and

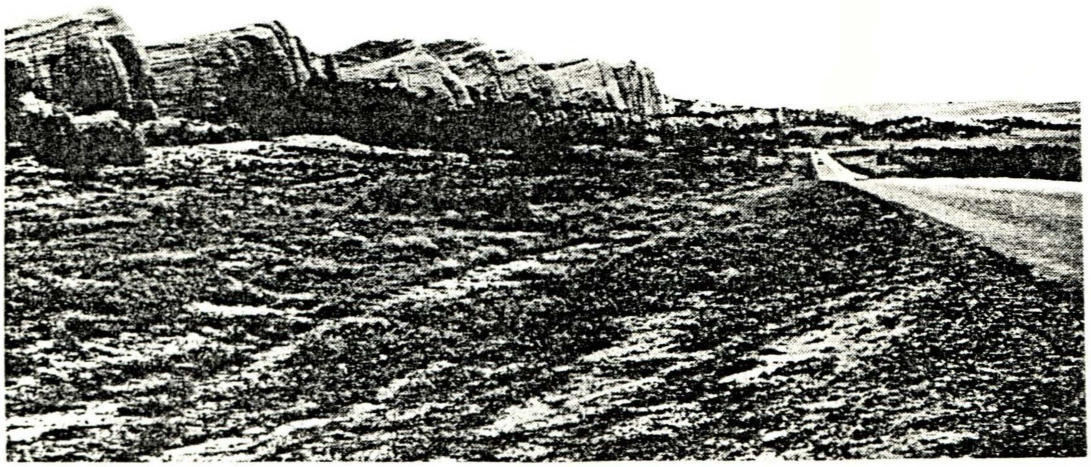
its major scenic features. Mindful that any survey of existing characteristics and values will consume considerable time and effort, the establishment of such relatively simple visual units can be the first step in a more complex analysis of the finer grained details to be found within each unit. A number of previous studies have suggested a variety of approaches to such detail, and doubtless this valuable work will continue. (Litton, 1968)(Daniel & Boster, 1976)(Leopold & Marchand,1968)(Nighswonger, 1970)(Craik & Zube, 1976)(Litton, et al, 1971).

It is a concept intended to form the basis of visual and scenic evaluation that is closer to the ways in which people ordinarily structure the complexity of what is seen. To acknowledge landscape form and character, the extent and boundary of the Visual Unit is limited by natural enclosing elements. This is a far more realistic apportionment than political boundaries, or operational policies; maps which show visual unit boundaries, are likely to be close to human perception of actual spatial landscapes. Historically, natural elements have been used far more effectively as boundaries between nations and larger political subdivisions than invisible survey lines.(Stilgoe, 1982, p101) Rivers or ridges subdue visual impacts that can occur as incompatible uses face each other across invisible political boundaries. Or, conversely, such boundaries can be made vivid despite the qualities of the landscape by the Maginot lines of urban sprawl, industrial development, or forest operations.

Major Form Elements in the Visual Unit

The Visual Unit is given spatial form by a combination of substantial elements referred to in this study as Floor and Enclosure. This spatial form is described in common usage by the broadly descriptive and familiar topographical terms: valley, basin, hollow, gorge, depression, corridor--there are many recognizable common names used to characterize spatial landscapes, suggesting the importance people place on the spatial volumes or envelopes, whatever the scale. Jackson remarks on the present tendency to favor land analysis in terms of natural divisions: (Jackson,1984, p43)

19. Floor tilted and broken



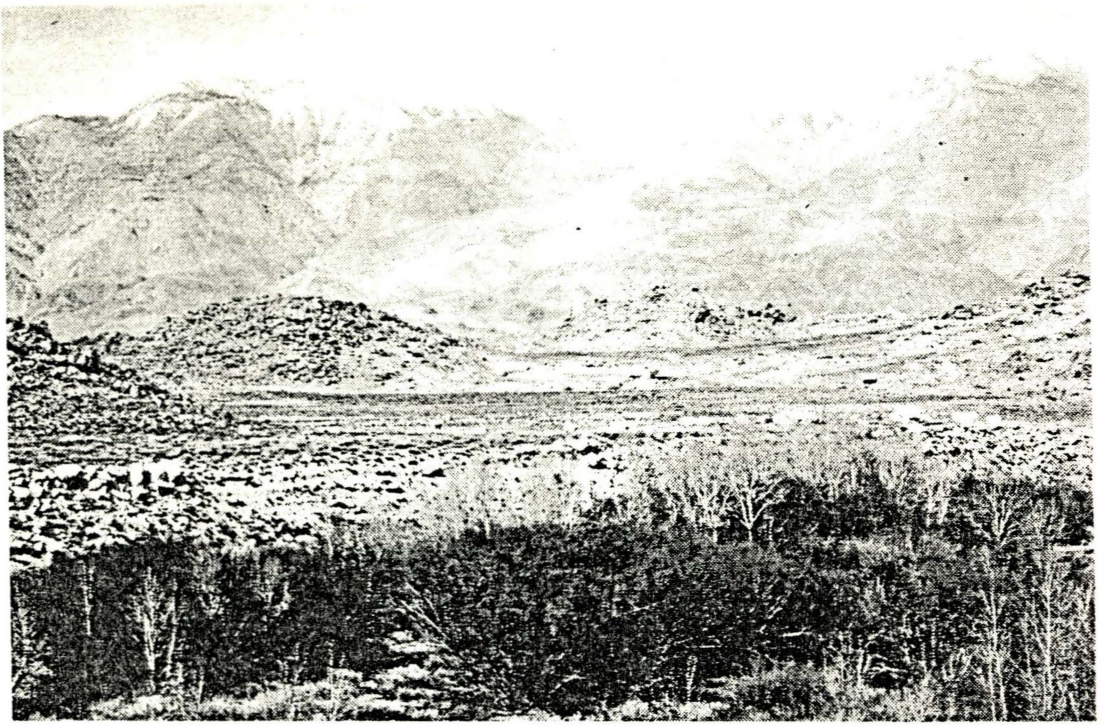
20. Clues to direction

"...if the landscape is often divided and analyzed into natural or topographical spaces--and the tendency to do this is becoming stonger--instead of into political or 'civic' spaces, that is because the landscape is now interpreted as a way of adapting to the natural order."

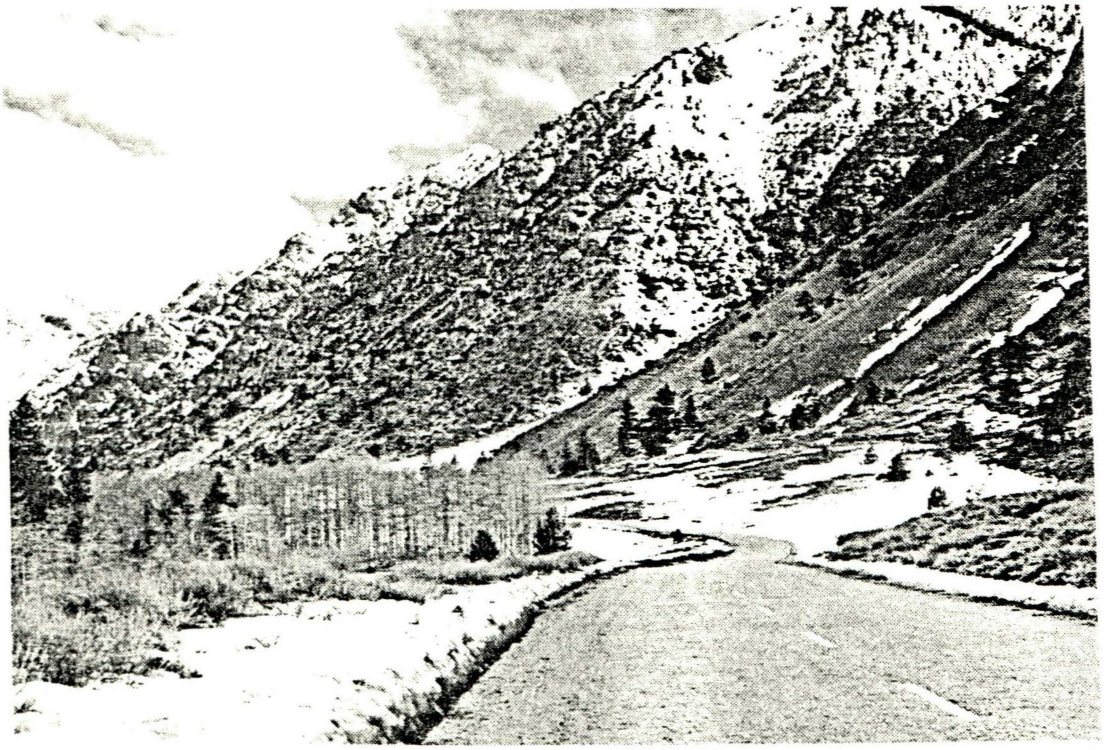
Floor

The nature of the floor is important. It is where the scenic observer is, it offers topographic suggestions to the routes he will take to move to the next point, and contains visual clues to qualities that are the basis for detailed enjoyment of his surroundings. It is human to want to know where we are. If there is distinct points of reference to position, it is more likely that unstructured rambling and simple looking can take place peacefully. On the other hand, if the environment presses in, and one is, in effect, lost, enjoyment may fade to be replaced by doubt, or even fear and uncertainty.(Tuan,1977, p16). See also,(Appleton, 1975) for an extended discussion of Prospect/Refuge theory, which is applicable here.

The floor is the ground or surface upon which we walk or ride; a surface which, as it may be undulating or rough, level or tilted, transmits meaningful physical sensations as one moves about. Fig.19. Gibson describes the Postural System and its relation to the earth in considerable detail, elaborating the psychologists concern with vision as just one part of the total living/perception experience. (Gibson, 1966) In some units or locations, shifting position may be easy and non-precarious, so that there will be few interruptions in the flow of movement needed to absorb and enjoy the scenic surroundings. In other units, the floor may be tilted and broken, obscured by dense brush or heavy forest. Then, a major effort is required to move safely, and one must pay attention to every step and watch every hazard. The force of gravity is always present; always making subtle demands on our stability and equilibium, at times blocking out other preoccupations (Gibson, 1966, p10). Aircraft pilots refer to a



21. Unit enclosure



22. The road one takes

similar gravitational influence as "seat of the pants". Certainly, we experience much the same sensations on the ground, even though those signals may be smaller in scale given the slower pace of locomotion.

The Floor is very important as access to scenic values. This does not mean paths, or roads but the perception of larger possibilities in what is primarily a mental or anticipatory state. Any visually stimulating space becomes more interesting and vital if one can perceive hints of its extent, observe the line of its boundaries, or glimpsef interesting objects or places within its influence. A common example is the combination of natural attributes that together to delineate hollows, glades, nooks, refuges, shelters, groves, etc. The language is crammed with a wealth of descriptive terms that reflect our fascination with shelter and prospect.

Access also means clarity in the larger patterns of movement. (Fig.20). Some of these are approach roads, the directional cast of terrain, a kindled interest in the overall form and extent of large units from maps, travel brochures, and the like. Access in this sense is again involved with memory, anticipation, previous knowledge, motivation, and other dimensions, mental rather than perceptual.

Enclosure

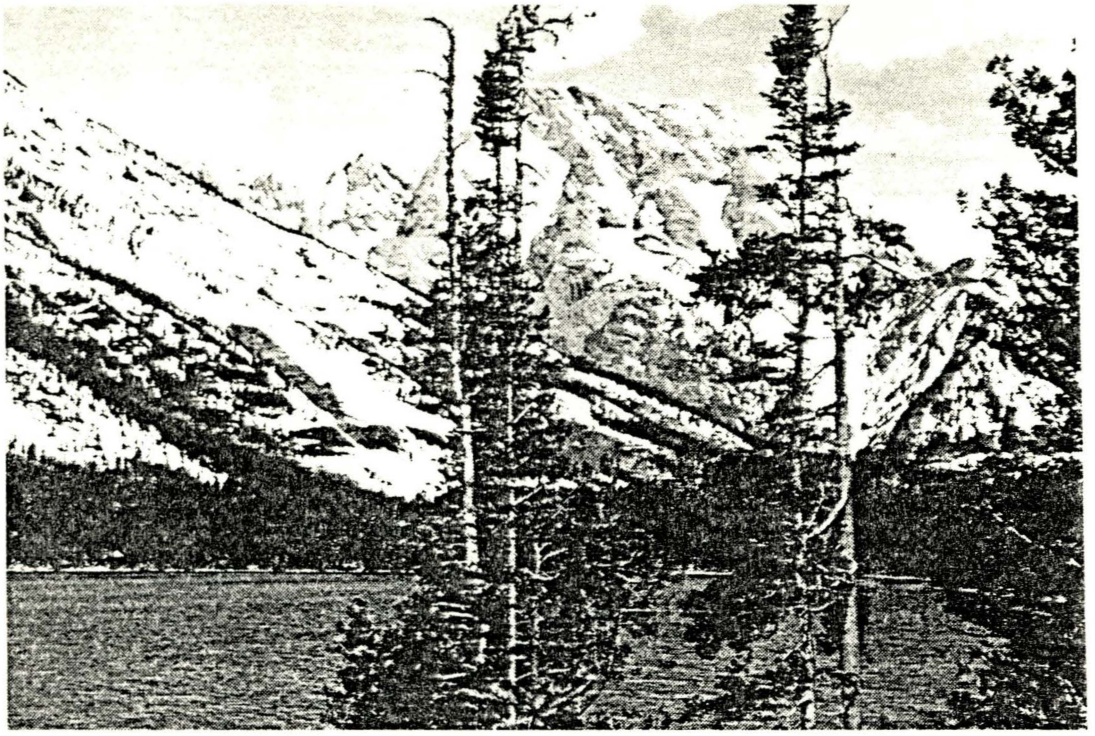
Topographic enclosure limits the visual unit's form. (Fig.21). An obverse form of this statement is true also; topographic enclosure forms the visual unit's limit.

Units should be represented on maps and plans by locating their boundaries; higher ground is employed to distinguish and separate adjacent units. In distinct units, enclosure creates a definite, often dramatic, valley, gorge, canyon, or pass. At times, enclosing mountains are a very important part of the set of qualities that elevate the unit above its neighboring areas in scenic importance. At other times, enclosure may be much less significant, and visual values rely on surface features or plants for their

impact. In such instances the descriptive words describing the space may be lighter in impact, such as swale, fold, or lowland.

In very large units, enclosure may bound entire major valleys. In coming to an understanding of the most practical and useful unit size to select, the decison should favor the largest unit that can be recognized. If there is a sense of unity in a very large landscape, it is probable that most people think of that larger size in structuring travel, or in using it as an orienting element. (Fig.22). Some units are so large as to require considerable movement--even travel--in order to absorb the form and disposition of those enclosing boundaries. This point is important. The ways in which people think about the places they visit are seldom limited to fixed scenes, attractive but limited elements, or views. Of course these attractions are important and appreciated, but the road one takes to reach a place in the country is also important to a clear and lasting visualization. The image of the map that provides general guidance is present in the background, the knowledge of the actual extent of a forest or park that one sees only in part, certainly helps to structure our reactions to what we see that day, or expect to see. Memory of past experience plays a part, long-simmering expectations and plans play a part, and so do a myriad of mental and physical sensations that may be experienced in parallel with a view--these all play their role in establishing a climate for visual enjoyment. For these reasons, it is perfectly sensible to deal with units of landscape that are very extensive, provided that these are formed and bounded so that we think of them as entities, having substance and form of their own, despite their large size and extent.

For some units, enclosing elements may be comparatively indistinct in parts when seen from the ground. This is particularly true when the topography is modest in vertical extent, or gently rolling. In these instances, in locating the proposed boundary on maps, it should abide by the highest available topography as a limitation, since that elevation is most likely to be seen from a majority of points within the



23. Adjacent units share feature

24. Attraction of water

unit. Fig.23. In open and flat country, it may be wise to locate unit boundaries relative to both topography--when that is at all significant--and to permanent elements such as outcrops, or substantial tree groups. These are likely to be very important visually as one travels across such relatively featureless areas.

In sum, the Enclosure forms the Unit and determines its primary visual significance; "it" is a unit. Saying it another way, we perceive each distinct Visual Unit as a spatial entity, coherent and complete. Its main elements are interpreted in their relation to the whole, and each contributes to unity; that dimension founded on relatedness, so typical of unified natural or sensitively designed complexes.

Water and Feature Elements

A vital contribution to a unified appearance is water. Fig.24. It is reasonable and understandable by all of us that every substantial valley or basin was formed at least in part by water, or now collects water because of its form. That water nourishes plants in proportion to the quantity and distribution typical of the place, and the result is a plant population that assumes a unified character reflecting this important resource. In dry or desert places the occurrence of water is essential to settlement, but even in well-watered climates, streams have a magnetic influence to all. The visual result can be distinct and satisfying; one of the strongest elements in differentiating one unit from another. Following the same reasoning, the unit enclosure may provide shelter from the wind, and may have dammed soils during erosive cycles to nourish plant growth. In consequence, the unit environment can attract wild animal and bird populations to aid in fertilization, control species development, or shelter predators. Any, or all, of these factors can and do contribute directly or indirectly to the character and quality of the visual experience.

There is universal appeal in water that justifies placing such emphasis on its form and quality in the landscape. Its infinite variety is a source of enjoyment for the overtones

25. Open and contrasty floors

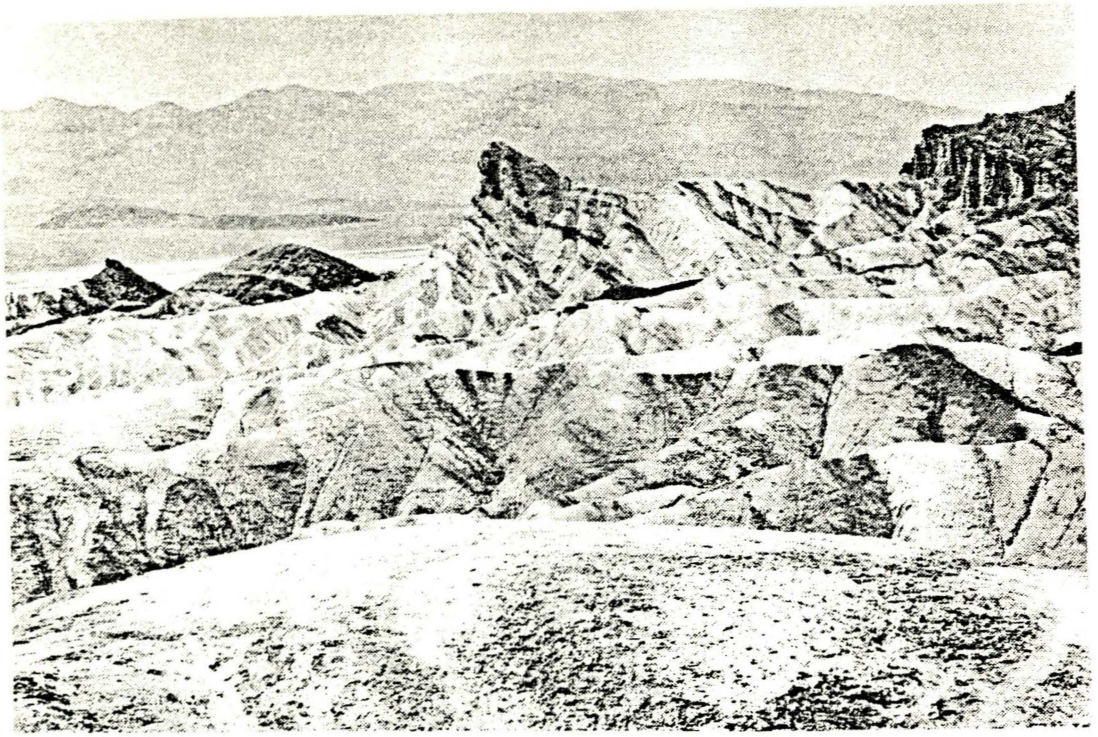
26. Woods limit visibility

of recreation that it conveys. There is also the sound factor; water is a soothing background indluence that can blanket the less happy sounds of our technological culture. Perhaps best, is the sheer visual pleasure of watching water in all its infinite leaps and stirrings, and seeing in it the basic fluid of life for things in nature, including man.

Scale and Extent

The scale of its enclosure and extent will vary widely, depending on the exact combination of topography and other visual elements present. Some Visual Units will prove to be quite small in extent; others will be very large and the limits of its enclosure may be beyond sight from any one point. However, since the concept is based upon our primary consideration-- that visual values must consider the observer in motion over time--natural boundaries must create the unit; the observer will discover its form and extent. In fact, the element of mystery has been suggested as an important factor in landscape appreciation. "Mystery" in this context refers to those parts of a landscape that may be inferred from landscape clues, but which are actually concealed from view. Such hints may draw the observer into additional and immediate exploration, or leave parts shadowy and unexplored, to tantalize the mind in expectation of future exploration.

In a typical scenic landscape, many units with distinct and impressive enclosure may have equally valuable open and contrasting floors. Fig. 25. In such places, the units will be easily perceptible within the landscape continuity (Litton & Tetlow, 1978, p 32) . In other landscapes, favored with similar distinct and impressive enclosure, the open portions of the floors may be minor in extent or heavily wooded, so that visibility is limited, and there will be few units that can be perceived with great spatial clarity. Fig.26. In comparing these examples, the unit that can be clearly seen will have a significant advantage in the short term over that in which the view is obscured or blocked by trees or topography. This suggests the importance of spatial



27. Sharply distinct forms

28. Interconnection is important

enclosure in forming a strong initial image, the basic structure on which we may allow free play of subsequent visual stimulation and the eventual formation of an esthetic assessment.

Over the longer term, the person who uses a particular landscape at frequent intervals, or who lives nearby, may over time, explore a dense and complex landscape so completely that he forms a strong and secure image of its structure and aggregated form.

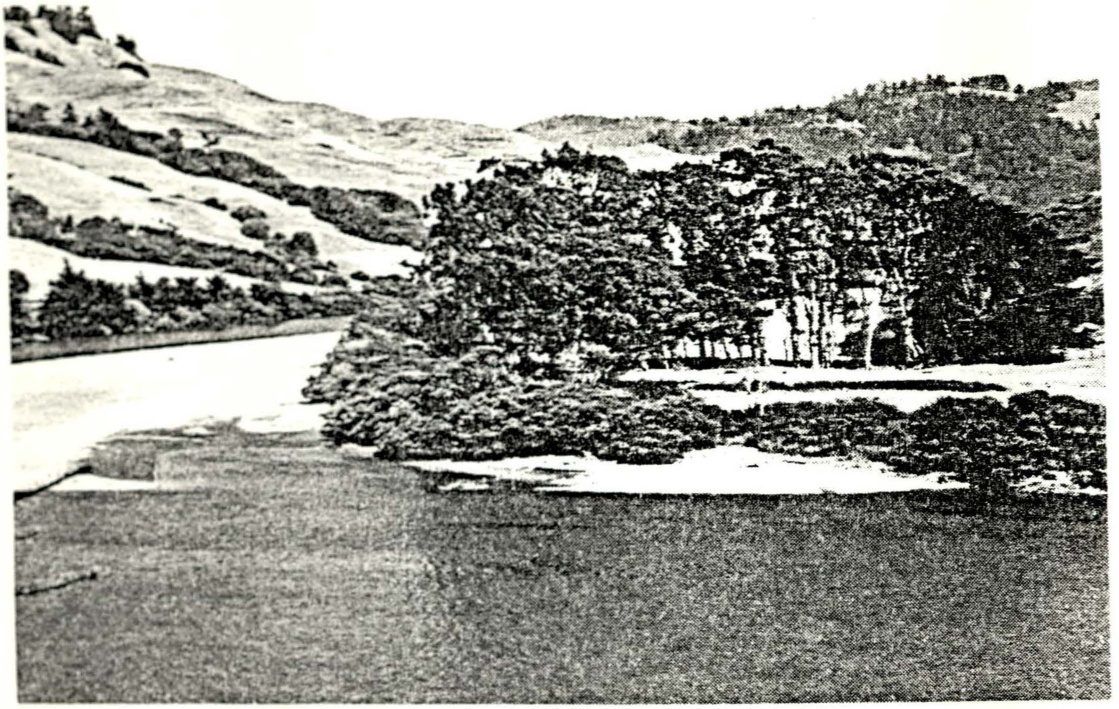
Between the sharply distinct and simple forms of the strongly bounded and open floored spatial unit, perceived strongly from the start, and the complex and concealed unit that may eventually yield to extended visual exploration,lies a wealth of variable possibilities. Fig.27. In the assessment of comparative visual values, it appears justifiable that strong initial impressions are such powerful stimulants in our memory cycles as to deserve preeminence among factors. Of these, the perception of space is certainly one of the strongest and most important.

Structural aspects of the Scenic Unit

With the basic premise in hand, that the visual unit is topographic in its boundaries, it can be seen that interconnection of adjacent units will be of importance. Fig.28. The drainage outlet from a Visual Unit has been given the name,"Threshold" to suggest its function as entry. (Tetlow & Sheppard, 1977). Few landscapes remain as distinct basins, apparently without outlet except perhaps those in arctic or desert regions. Those that do will eventually stabilize by filling with ice, water, or loose materaials. For even these, there will be some type of lower outlet point. In the normal course of things, this outlet is visible, in part because we expect it, and largely because it is distinctive. Not all thresholds to units have drainage elements that are distinct enough to become of significant visual value. Some thresholds are principally topographic in nature and form, and as such afford entry to the unit by affording greater ease of access.

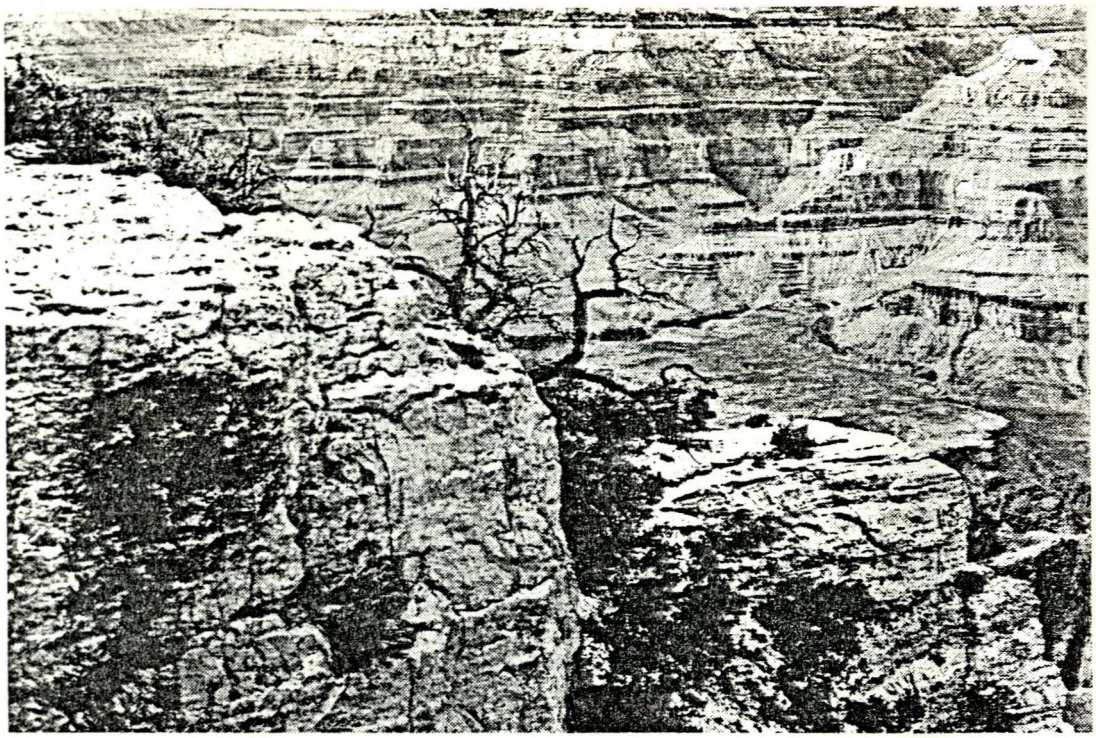
The internal area of the Scenic Unit may be subdivided into segments which have a common slope characteristic, form a sub-area or spatial entity within the unit proper, or mark varying slope conditions. Field conditions within these small unit subdivisions may warrant differing management potentials without seriously impeding the overall policies adopted for the unit. Just as the viewing distance idea now in force for VMS can result in operations adjusted to that distance, so the internal subdivision of the unit can help.

These subdivisions are called visibility sectors, or vulnerability sectors; the latter suggesting that operational policies may be adjusted at sector boundaries.

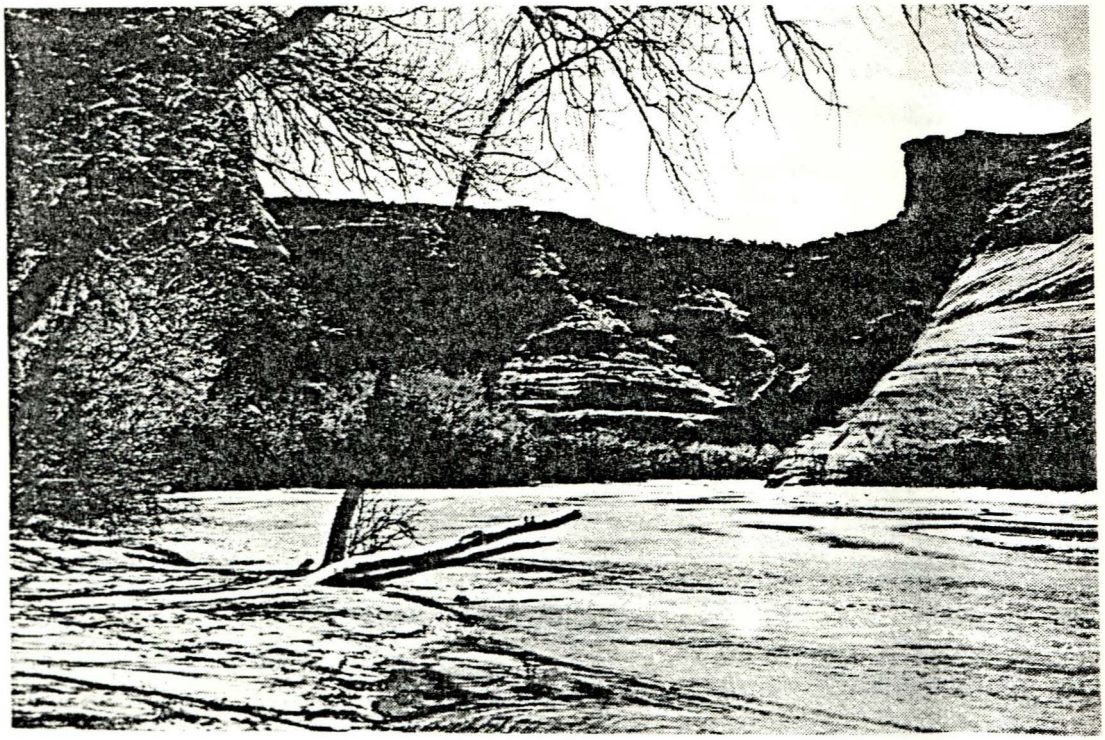


29. Desireable features

30. Division into visual units

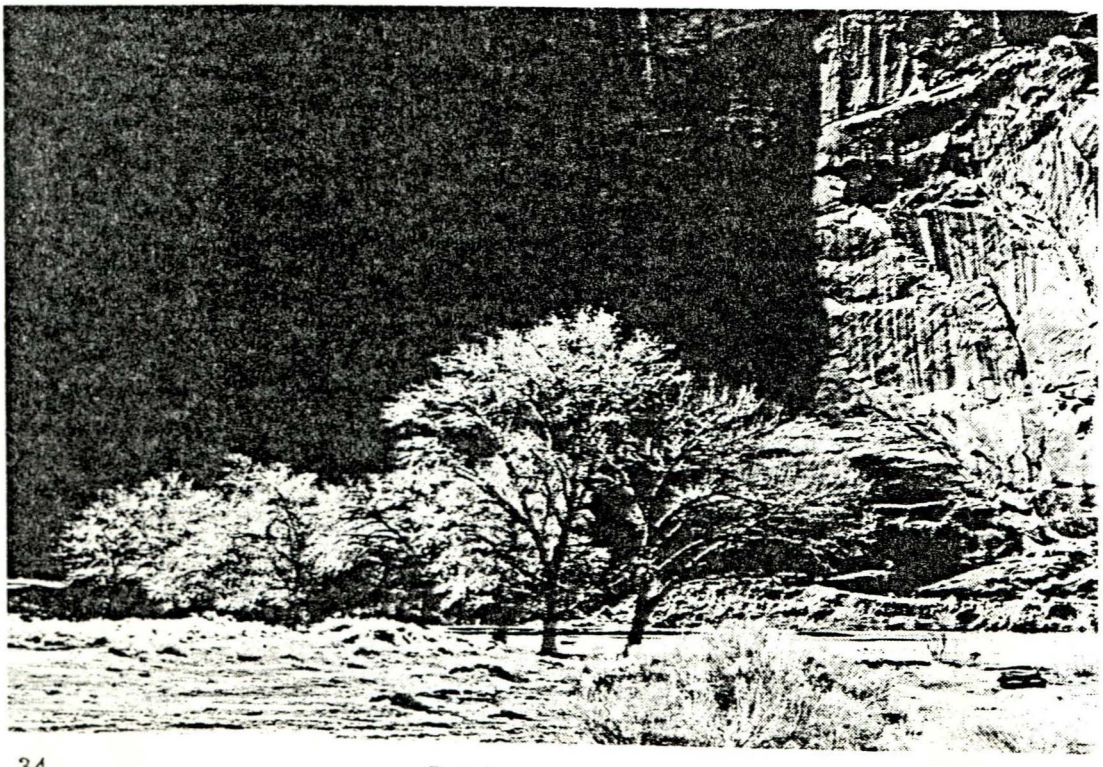


31. Simple and vivid valley space

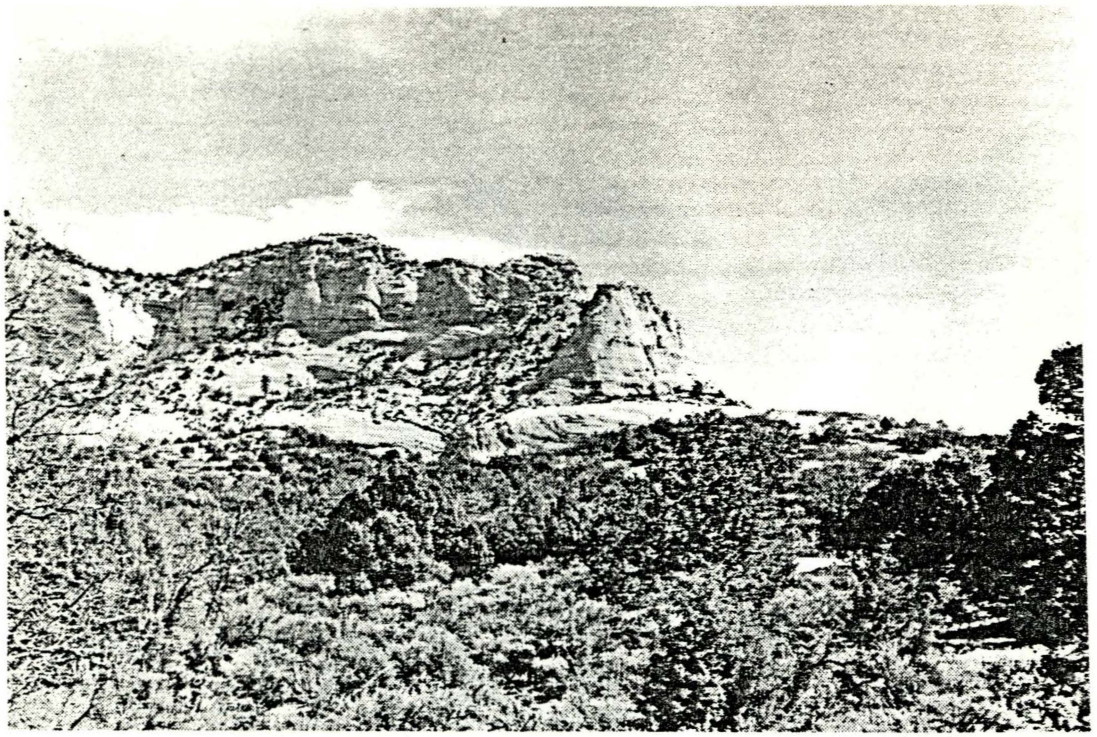


32. Simple sweep of enclosure wall

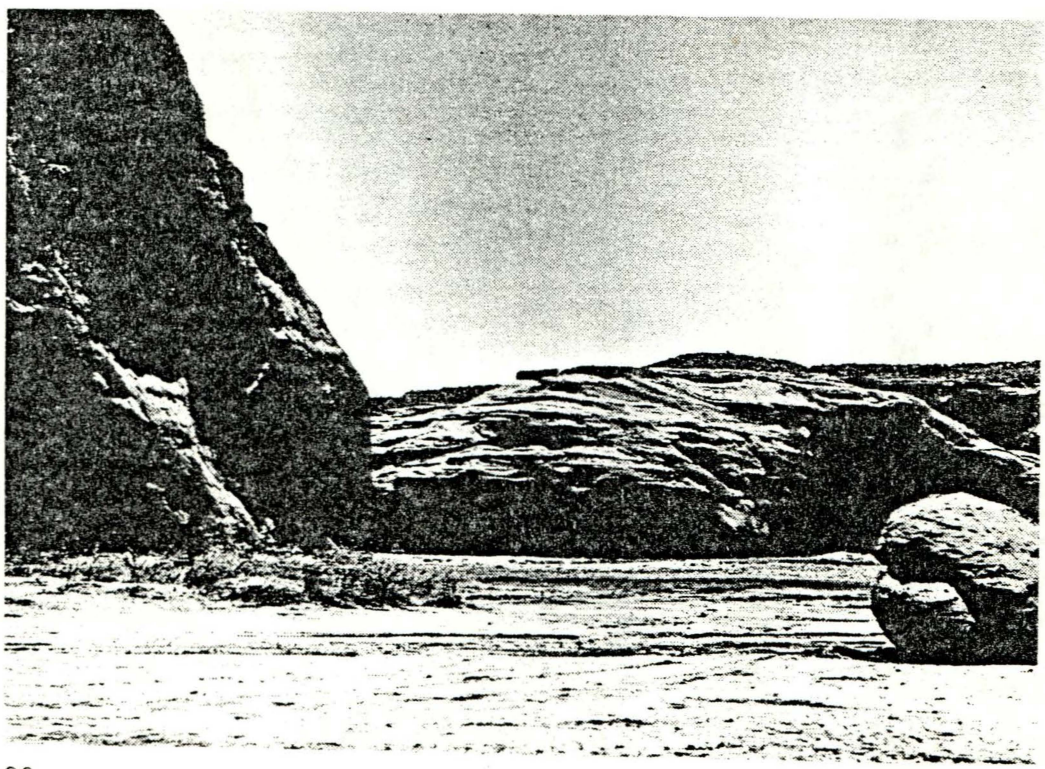
33. Enclosure broken in its upward sweep



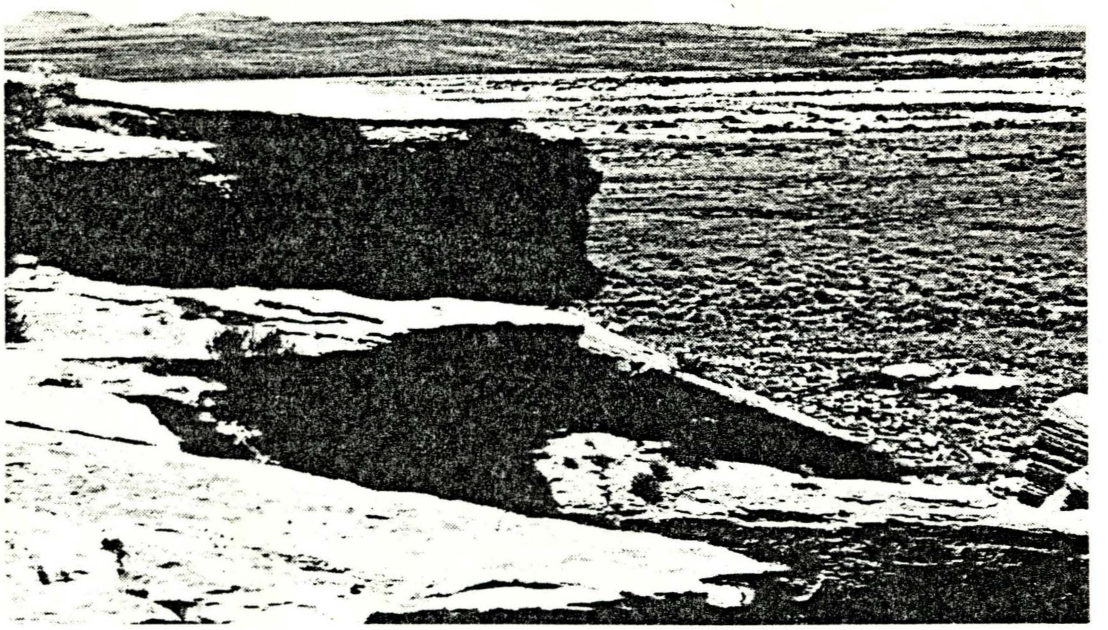
34. Bright sun and dense shade



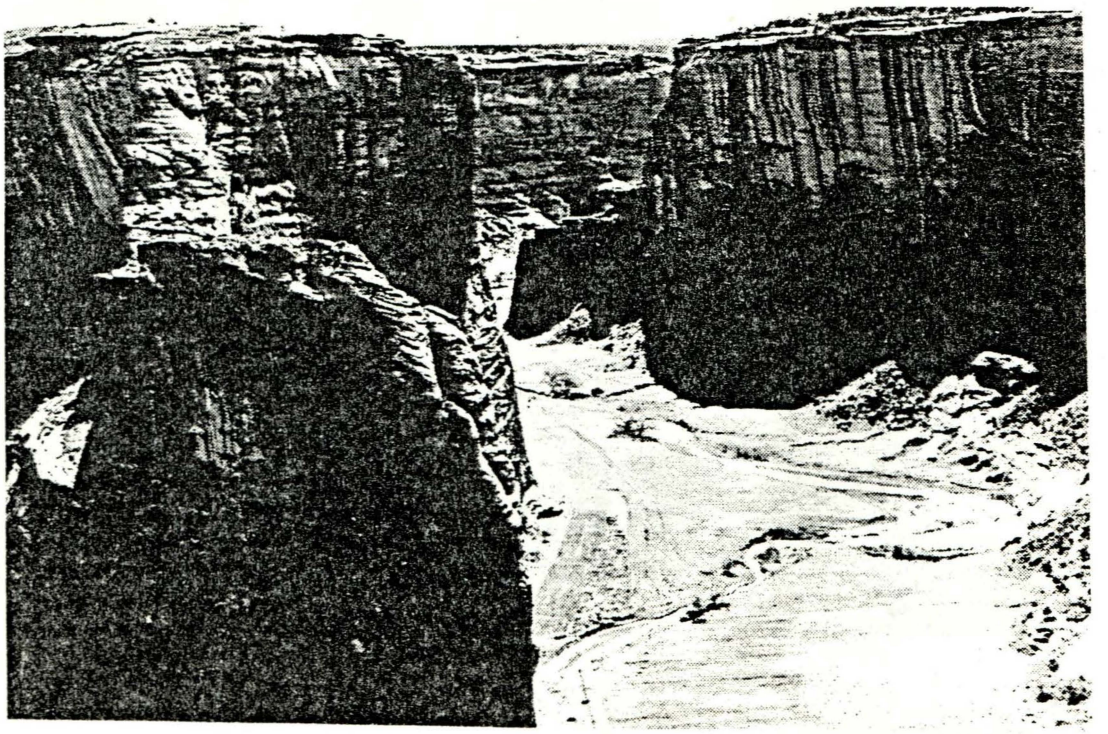
35. Difficult floor



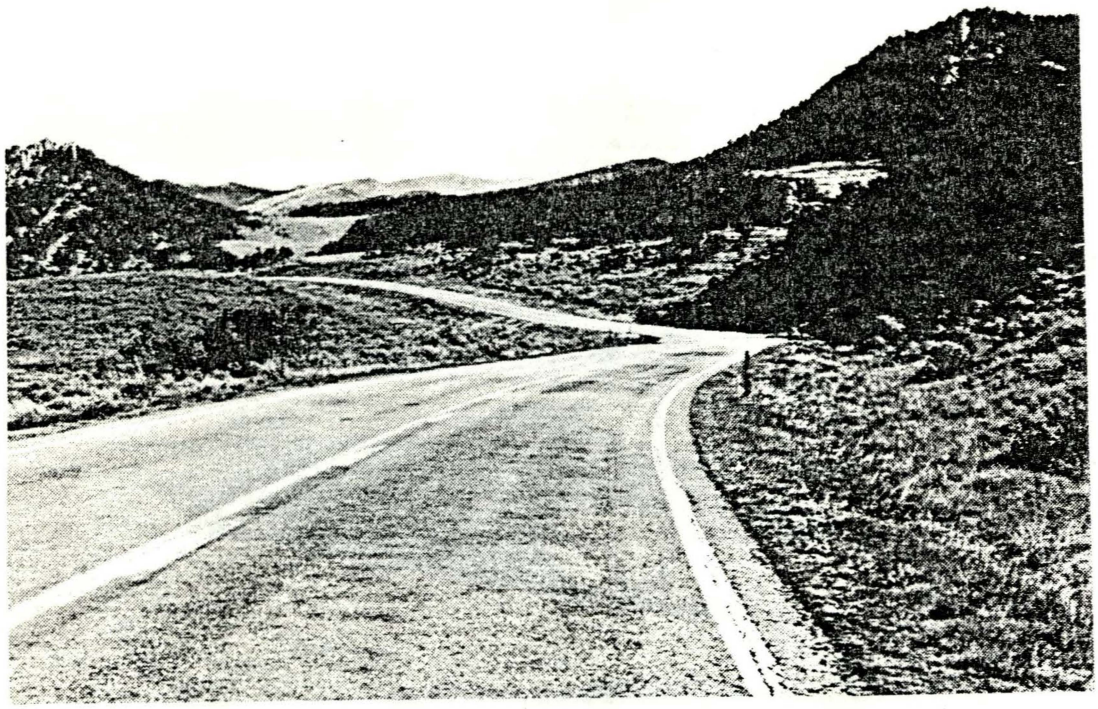
36. Skyline contrast exceeds bright floors



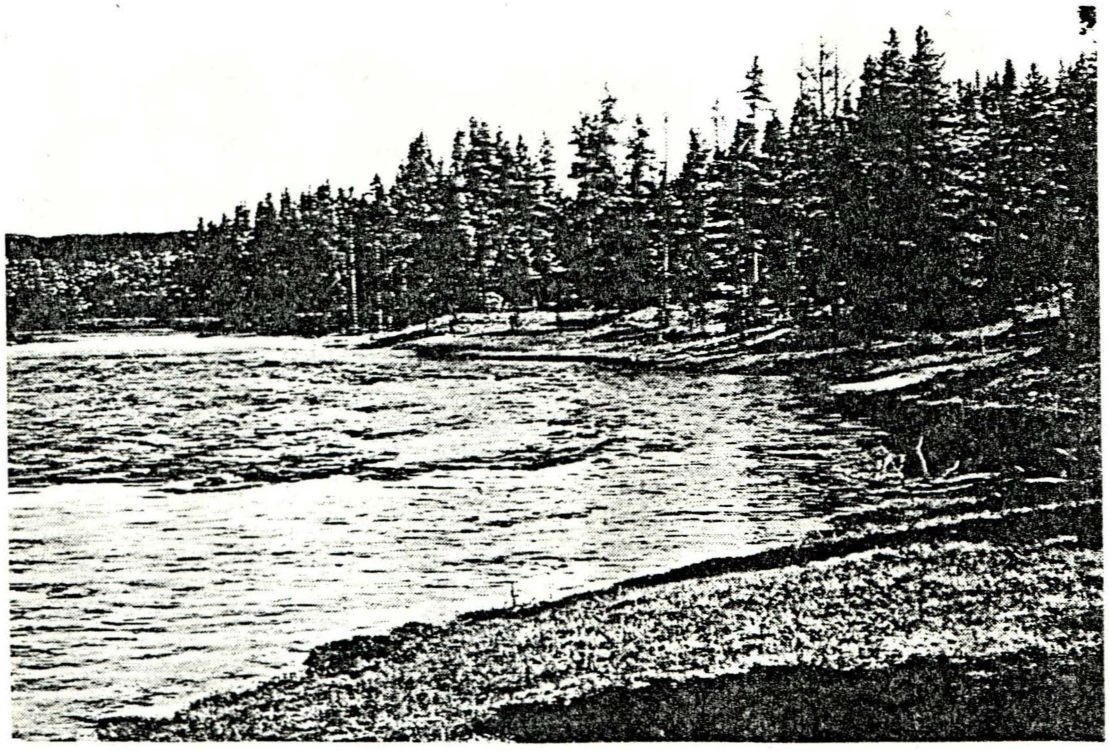
37. Skyline distinct and definite



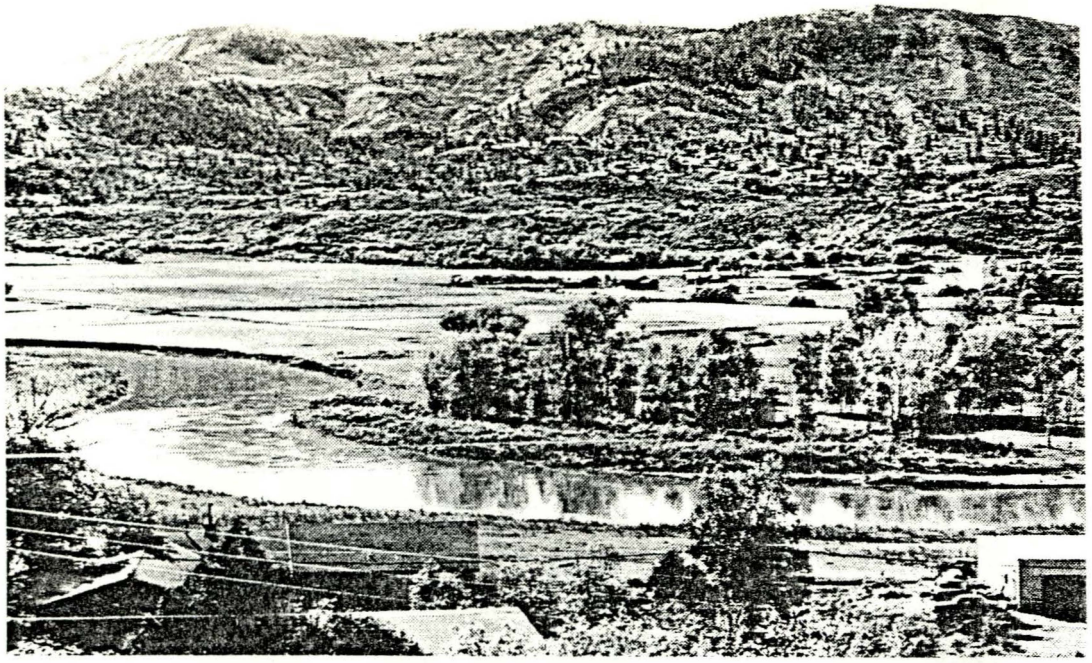
38. Clarity of the floor



39. Profile connects units



40. Water makes terrain visible



41. Flow clue to direction

42. Impact of major lakes

Descriptive Components of the Visual Unit

Description of anything as complex as an extended scenic landscape can only be suggestive, as a character sketch of a person represents only a surface treatment of that complex organism. But this need not be a serious impediment; no evaluative survey can do more than select desireable and key features and deal with them. Fig.29. It is not functionally feasible to make an exhaustive and complete analysis of every detail that contributes to visual quality; study areas are too large and the available manpower that can be diverted to accomplish the task is too small. It is realistic, however, to identify segments of promise and quality from those of marginal value. The Visual Unit concept can accomplish this much with economy of effort.

In subsequent stages of elaboration, the results of a broadly-based inventory can be subjected to careful scrutiny and review. It is possible that initial Unit boundaries may need adjustment, particularly in terrain that shows little relief. Public interest may run high in favor of specific locations within units; certain features that are a part of local history or social patterns may require more emphasis on that account. Fishing streams, white water, incidence of rare plants, animal populations, historical sites of a local nature, traditional picnic and camping areas; all these are possible factors to alter the balance produced by a complete first inventory. With a landscape subdivided into visual units, such adjustments can be made against the stability of an ordered framework, so that the merits of any particular argument may be judged relative to all the resource.

Interpreting the Configuration Diagrams

In Appendix A, are five sheets of drawings. These contain representations of landscape configurations. These are arranged under the major feature types contributing to visual interest and quality; Spatial Dimension and Character, Water form and Setting, Features and Accents, and Development structures and impacts. Each of the major

feature types is subdivided into a number of configuration possibilities. I believe that these will prove adequate to reasonably describe an adequate working representation of visual interest and quality, that one is likely to find on the actual site. The diagrams are generalized, and not meant to represent any particular landscape or region. It is probable that all of them may have an actual counterpart somewhere, but factual representation was not deemed a desireable attribute; instead, a diagram neutral in its major features would have a much better possibility for matching with a real landscape under study than it would if recognized, with all the personal dimensions that would then influence a technician using them.

Each factor is represented by five drawings. These are designed to represent five gradations of each factor. In order that the inventory may result in a useful comparison of the aggregate of factors, each of the five drawings is given a rank number, ranging from zero to 10. The steps double with each step upward, except for the highest portion of the graphic scale which has a rank value slightly greater than double. The numbers are not intended to represent absolute values of any sort, but simply to serve as a comparison within a system of many complex variables. As such, they have been chosen for simplicity, and adequate numerical separation such that the best examples of each factor has the power to bring up the comparative value of one unit over another, and not be overpowered by multiples of weak values.

It should be clear that these drawings represent the professional viewpoint of the author, a landscape architect with a deep regard for the importance of the power and contribution of the visible landscape character in specific places. This is not an opinion formed in isolation; it has been shaped following many years observation and thought, the contributions of students and colleagues especially R.B. Litton, Jr., and more than a little actual experience in the field. I believe that they will be intelligible to other people, and that the differentiation described in graphics and captions together can be adequately related to actual study landscapes. If that proves so, it should be possible, using them as exemplars, to assign comparative values to conditions in landscapes inventoried using the visual unit system.

For those who will object that no two persons see the landscape in quite the same way, I can agree wholeheartedly. But I can also suggest that most observers are likely to perceive the differences embodied in the drawings and will be able to relate them to other landscapes under study. This leaves the more elaborate question of each individual's personal preferences and reaction at another level of inquiry, beyond the scope of this work.

What is not clear at this point is the degree to which one or another of the twenty-three factors should predominate. One might argue effectively that Cross-Section Contrast is more important than even severe impacts. This may prove so, taking a great many study cases for comparison, but I think it best to allow experience to suggest the truth. It is certain that some factors will have greater personal appeal than others, among those who apply the system. It is equally sure that if the lay public is asked to use these diagrams and their descriptive captions as a method for validating the work of service technicians, they would encounter the same set of problems. But I suggest the possibility that they could well arrive at the approximately the same judgements.

Narrative Description of the Configuration Factors

Spatial Dimension and Character

Spatial Vividness is, in my view, the most important of all the factors. It characterizes the vividness and clarity of the physical space, creating the framework and stage for all else. Since actual space--the void--cannot be described directly, I have chosen to identify attributes of the spatial boundary--enclosure and floor--allowing them to represent a condition which cannot be shown graphically on a flat sheet of drawings, nor described adequately in words. On the other hand, there is no doubt that the sense of space is real and felt by everyone, or that it is important.(Goldfinger, 1941) Despite the difficulty, it is imperative that this most important quality in the landscape be recognized in inventory and evaluation.

The first of the seven factors is **Spatial Vividness.** It is meant to signal, in an overall way, the impact and distinctness of the landscape space. Fig.31. The simpler and most vivid valley forms are most strongly perceived; at the lower end of the scale may be found shallow valleys, depressions, or folds in the ground, that assume a perceptible degree of spatial definition from topography. Simplicity is given preference. (Arnheim, 1974, p.51)(Gibson,1979, p.247)Spatial forms that are branched or diverse may be visible only in part, requiring good deal of time and travel to perceive the full extent. On this account, they are placed lower on the scale. Read Canter for a parallel exposition of map cognition and simplicity.(Canter, 1977, p.73)

Cross-Section Complexity is the second factor. This describes the vividness and simplicity of the enclosing topographic barrier or wall. Given the highest value is enclosure that rises from the floor in one simple sweep or incline to a ridge or edge that is also the unit boundary. Fig.32. Most strong canyon forms or dramatic valleys enjoy this characteristic.

From this simplest and strongest type, there is a progression to topography that encloses, but not in one continuous slope; it is broken in its upward sweep. Fig.33. The terms Primary and Secondary Enclosure can be used to suggest the major slope breaks although in some units, the enclosure may be further subdivided, broken, of mixed types etc. As has been explained, the highest or most valuable type--the simple and unified primary enclosure--should be selected where there is a mix from distinct to less so.

The third factor is **cross-Section Contrast**, and suggests the contrast relation existing between enclosure and floor. In general the more broken, tilted, narrow, and multi-leveled the floor, the less it will contrast with enclosure--the more likely it will be seen as part of the enclosure. In extreme cases, there will be no perceptible floor, with the slopes terminating in an in accessible rock-bound stream.

Other points contributing to contrast are: plant color and density of cover, soil or

rock surface color, seasonal color variations, the contrasts of bright sun and dense shade, Fig.34., development impacts, or social uses and impacts. These and other factors can be influential in altering the importance of the floor, and hence the impact of the enclosure developed through contrast. A Tilted and broken floor varies the light reflection so that size and shape varies. Highly variable floor ledges or loose rock piles functions in much the same way, obscuring the visible surface and reducing possible affordances.(Gibson, 1979, p. 127)

The fourth factor **Spatial Accessibility,** compares units on the basis of flexibility of observer movement. If there are a variety of routes, roads, or trails traversing the floor, and a sense of openess permitting views outward and forward, that unit can benefit from a richer variety of possible fixed and moving viewpoints and hence a richer experience for the traveler seeking interesting scenic experiences. While there is acknowledged interest in visually attractive fixed views or scenes, those perceived in the dynamic state--while the observer is moving--promise even greater interest, just as a film can depict excitement solely through the flux of images. (Johansson, 1975)(Appleyard et al, 1967 p.81). At the low end of the scale is the unit with complex enclosure and difficult floors that preclude moving over the surface freely, except by strenuous exertion. Fig.35. While such places may be sought out by those seeking solitude or by those intending a detailed survey of the area--perhaps away from the company of those less rugged--it is likely to make a diminished initial impression in most viewers because of its obvious difficulty and uncertainty. Read Appleton for a more complex review of the counterpoint between safe and easy ground and perceived hazards.(Appleton,1975, p 99).

The Fifth factor Skyline is fairly obvious. The inherent contrast between enclosure ridges and the sky is among the most significant edges we see. The brightness range from noon to sunset varies widely but in proportion to all the rest. In other words, when the light is intense and the floor is illuminated brightly, the contrast of a bright

sky relative to steep enclosure is still great enough to overshadow the bright floor. Fig.36. When the light fades, near evening, the floors recede from view and the skyline becomes even more vivid and compelling. In all the ranges between, the same proportion may be seen, with the skyline brightest.

This factor addresses the form of the skyline as well as the contrast between light sky and shaded enclosure. Pinnacles and jagged fingers of rock are a visual imperative that is also brighly illuminated. Mountain peaks command attention through their function as an interruption of skyline, perhaps as much so as their function as a commanding feature. The drawings show a range from vividly peaked, distinct or accented in part, to smooth edged or rolling. Fig.37.

Floor Profile is the sixth descriptive factor for Spatial Dimension and Character. It suggests the visual function of the profile to impart form and direction to the long axis of the individual unit, and to the more extensive profile that connects several units. This factor relates to the strength of the floor as unit space enclosure. Profile is defined as the form of the ground surface as it extends across, or along the unit axis.

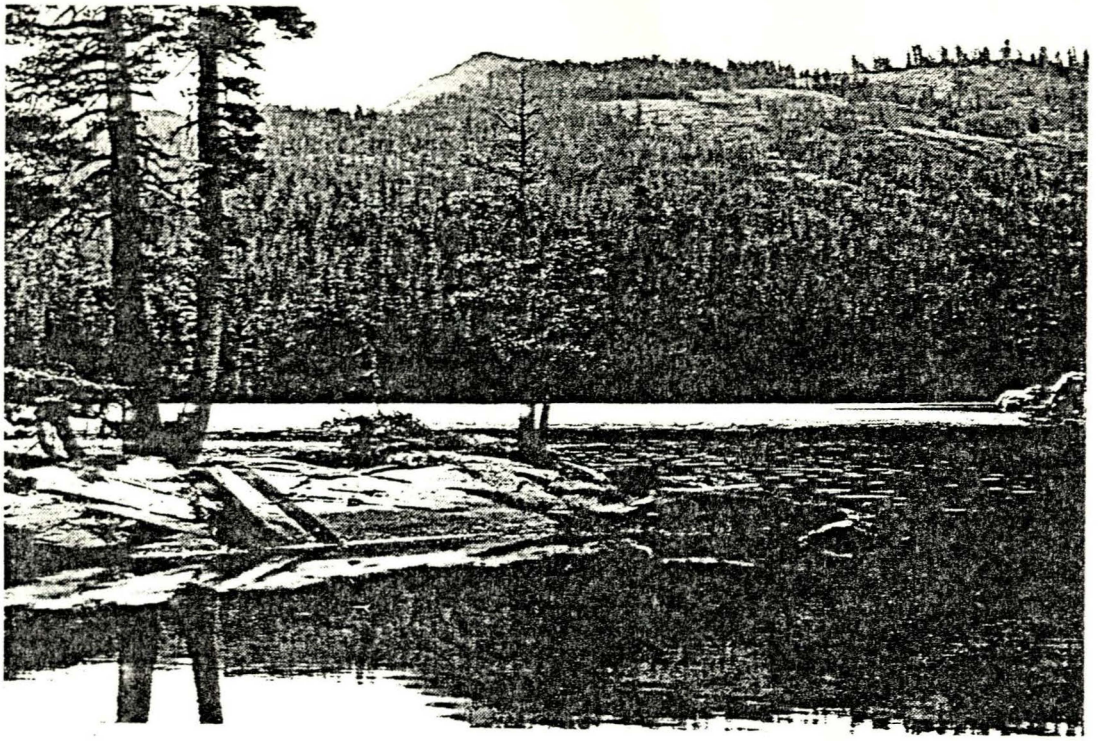
The profile has an important part to play in the overall clarity of the unit. There are two subfactors in operation. The first is the simplicity of the profile. Perhaps the cleanest example is one which extends without change of elevation and without physical interruption. However, the highest rating is given to the profile that presents sufficient breaks or varying slopes in the form of the profile that water effects such as falls and rapids may develop. Also, such variation in the continuity of the floor is visually attractive, providing the view is not impeded by too great a variation in the vertical interval. Breaks should be such that the connections between levels do not force a serious interruption to travel and such that the clarity of direction and power of the floor is preserved. Fig.38. The second is the degree of interruption to circulation.

Canyons, high vertical breaks in the profile, rock falls, forest or flood debris, and general impassibility will all make it difficult to view the unit since it is difficult to move freely along the profile. For this factor, the higher ratings are given to profiles of simplicity and clarity, open and evident, with significant drainage, or consistent slopes; lower ratings are appropriate for open ground that has no evident profile to structure directional thrust, simply because there is only insignificant enclosure to give form to any particular direction. The directional stimulus provided by a strong profile can create powerful connections across and between units. Fig.39.

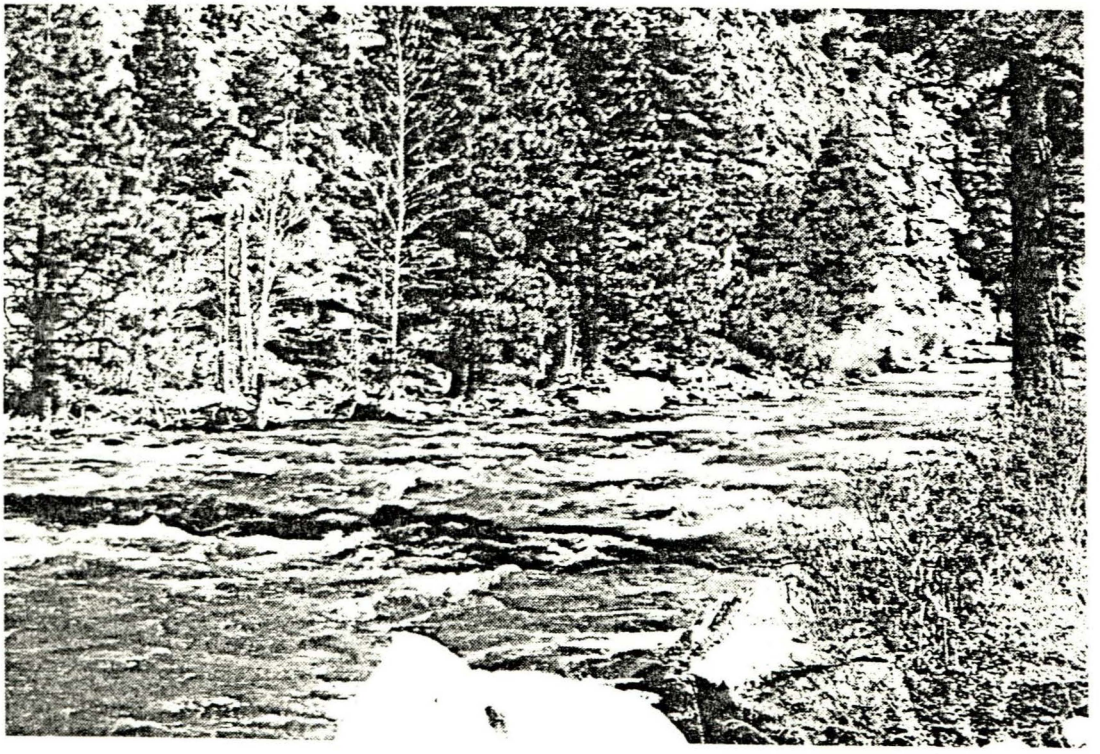
Water Form and Setting

Water is of universal appeal. There is the dimension that acknowledges water as a basic life necessity, and that builds on the infinite visual variances one may see in water's fluidity. Of great importance to the subject of this study, is the fact that water helps make landscape and terrain visible. Fig.40. It serves as a measure of horizontality or slope, of shelter from wind, of velocity and volume of water flow, of purity, seasonal variations, and more. It is, quite simply, enjoyable to see, a source of infinite variation, and a wonderful reflector of light. It's translucency screens, mirrors, or clouds the stream or lake bottom all at the same time, depending upon the light, the angle of reflection, the depth of water, or the wind.

Flowing water contributes strongly to the strength of unit profile as mentioned previously, but has a dimension of its own. That is the vigorous activity that water imparts when giving form to the continuity of the unit and the unit floor. Rivers are great connectors, not only visual connectors, but for drainage as well. The shoreline of rivers and streams are frequently sought by pedestrian travelers as informal trails. The evident flow of water is a major pathfinding clue to direction and slope. Having a generalized idea of the orientation of a large area, a glimpse of a stream can tell the hiker most of what he needs to know about direction.Fig.41.



43. Shore is magnet to the eye



44. Water suggests profile variation

The drawings represent seven different dimensions that describe water and its setting. These include lakes, streams, rivers, river or coastal indentations, and the seashore. Other factors, such as frequency of occurrence may be found in later sections under Features and Accents.

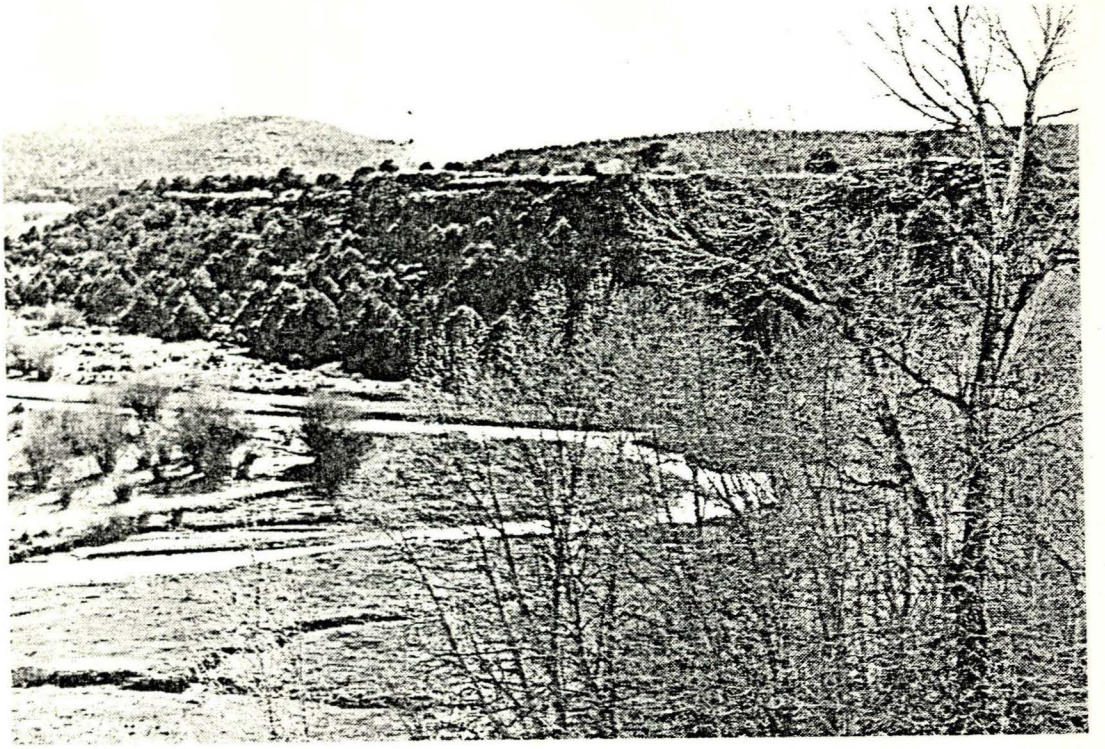
Lakes; Extent and Character This factor is reasonably self-evident. Again, the higher ranking is given to simplicity and clarity, to accessibility, and to persistence during the seasons. Fig.42.

Lakes: Shoreline form Water in itself is limited in value. It is the bottom and the shore that provide reference. In the larger view of landscapes, it is the shoreline that is first seen; that becomes a magnet to the eye. An indented shoreline yields infinite variety in wind-modeled water surfaces, as it is enclosed by points, or sheltered in bays. The varying shore itself suggests prospects over the water, and the opportunity for a rich succession of different possible compositions of water and shore. Fig.43.

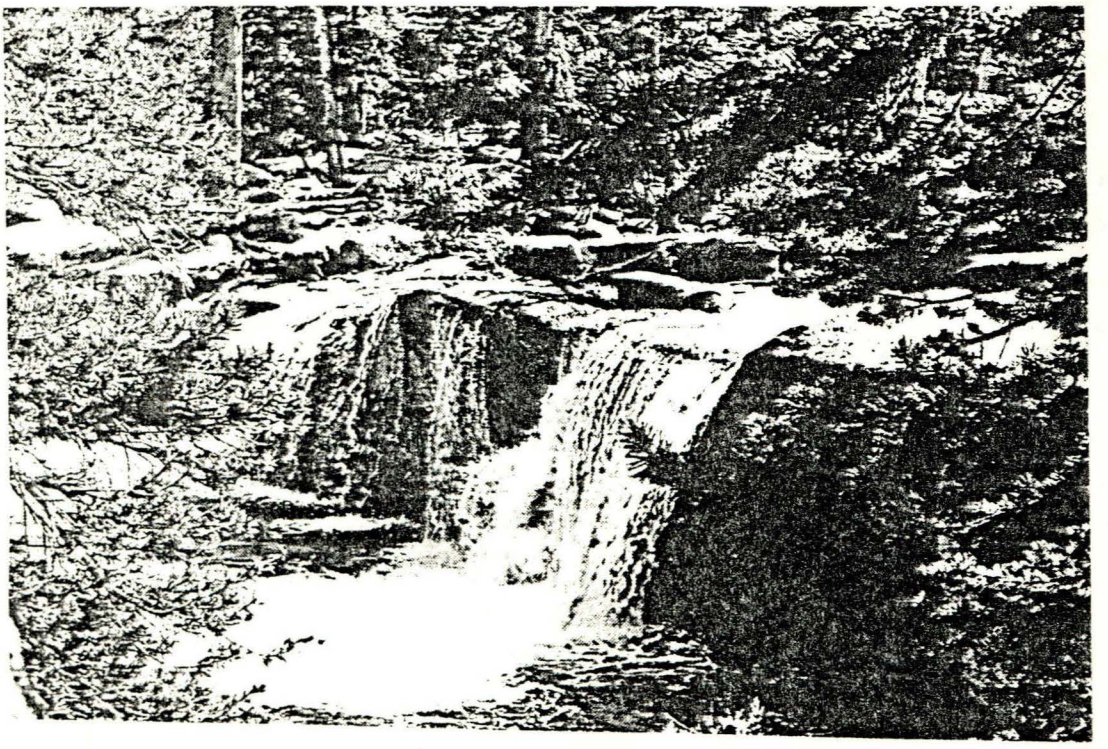
It is actually the combination of lake shoreline and lake size (or the number of lakes in a group) that determines the overall value. A large lake with simple shores will not have the same rank as one with highly indented shores. It should not be forgotten, however, that other factors such as timber cover, visible impacts, and development affect values as well, but the combination of surface and shore is unique and valuable.

Another characteristic represented in the drawings is the importance of the water's edge. When that edge is dramatized by sheer rock faces, rocky outcrops, and unobstructed edges, ranking is high. The reverse is true for simple forms and obscured shorelines.

Rivers and Streams: Extent and Character This factor takes into account the volume and extent of the stream, a condition that has so much to do with sound and water action, depth of water, and adaptability to various uses.



45. Low banks in an open setting



46. Water and ledges

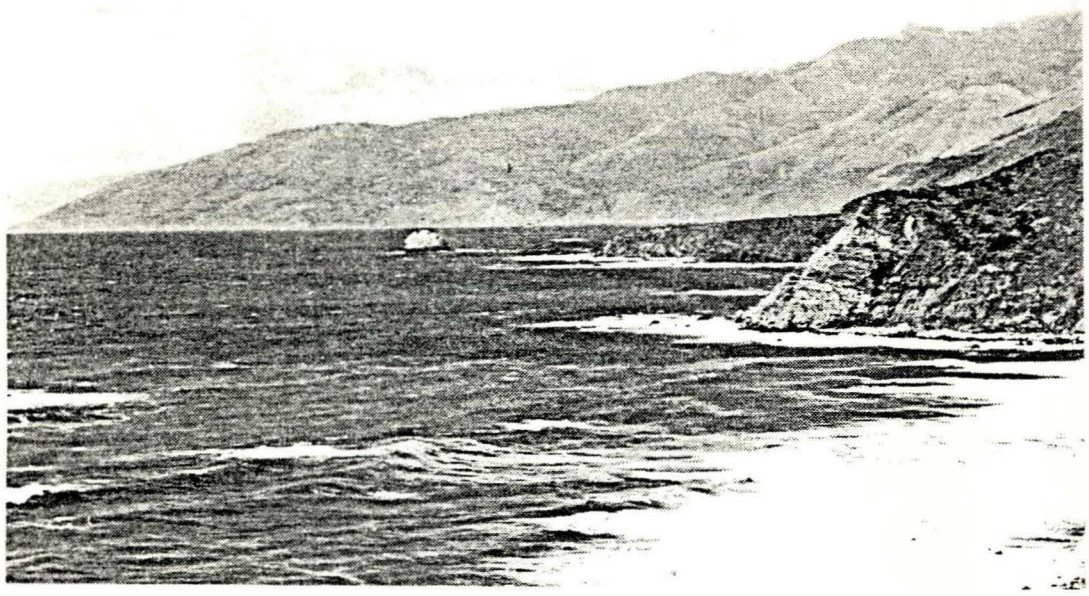
More account is taken of high volume streams with evident internal motion and surge; less for sluggish and intermittent streams.

Rivers and Streams: Shoreline Form As is the case with lakes, the combination of the flowing water and the shore is more important than either characteristic taken alone. The differences between drawings follows much the same logic as that for lakes. The significant variation is that for streams, there is the action of the water as it finds the profile. Fig.44.

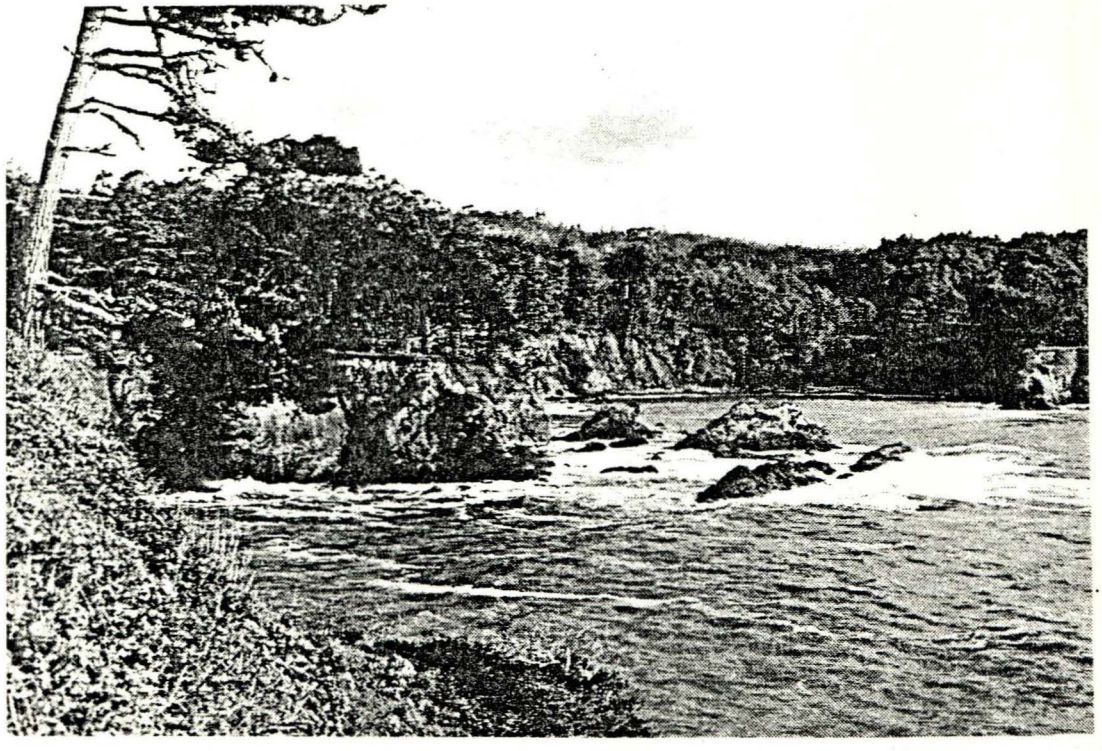
The shoreline form determines the way in which the flowing water may be blocked, forced into channels, or diverted to falls and cascades. It is water action that is visually irresistible. Accordingly, the rank of high volume, complex streamcourses is greater, with ranking reduced as shoals or low volume diminish the stream to a sluggish, shallow, or unapproachable version.

Stream and Lake Setting All water occurs in a larger landscape setting within the unit confines. Fig.45. The unit enclosure may form part of that setting to great effect, especially when the enclosure walls extend downward into the water. This is a comparatively rare occurrence, however. The usual condition is that there are ledges or rocky shores; debris from enclosure slopes. Fig.46. Lesser rank is given to settings of low elevation, where the enclosure is less dramatic, or to secluded water in steep canyons or deep woods.

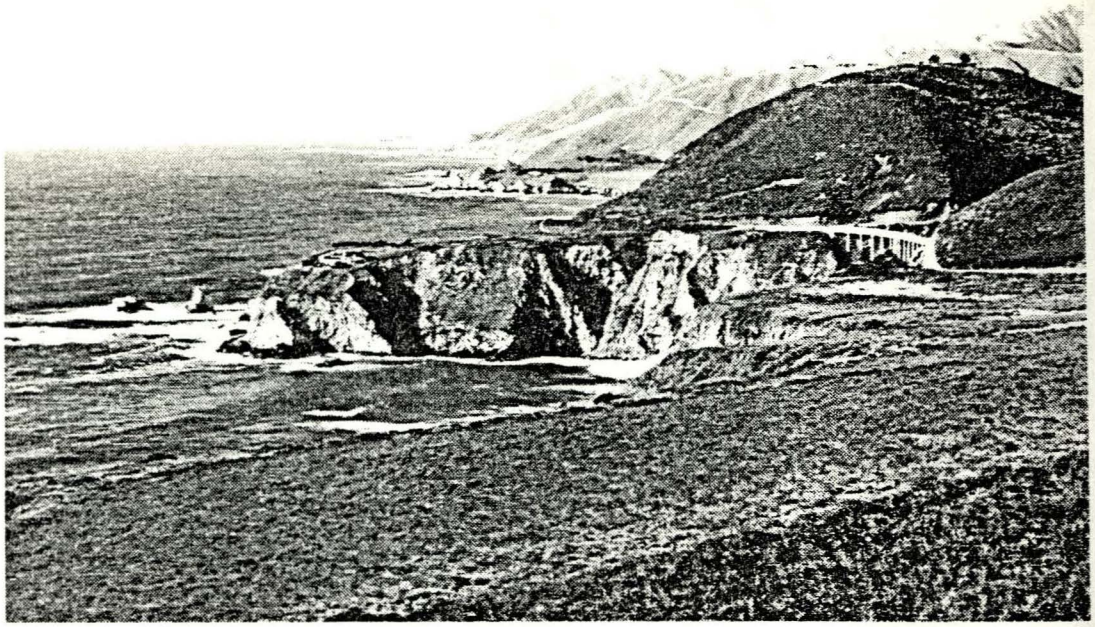
Coastal Shoreline Form Since the volume or extent of the sea is a more or less constant, except for tidal effects, the next two factors describe shoreline form and the character of the setting, rather than the volume effects typical of streams. The logic follows that applied previously; the more the shoreline is broken and rockbound to stimulate water action, and the greater the indentation and framing of the shore to develop various prospects and views, the higher the comparative ranking. As the



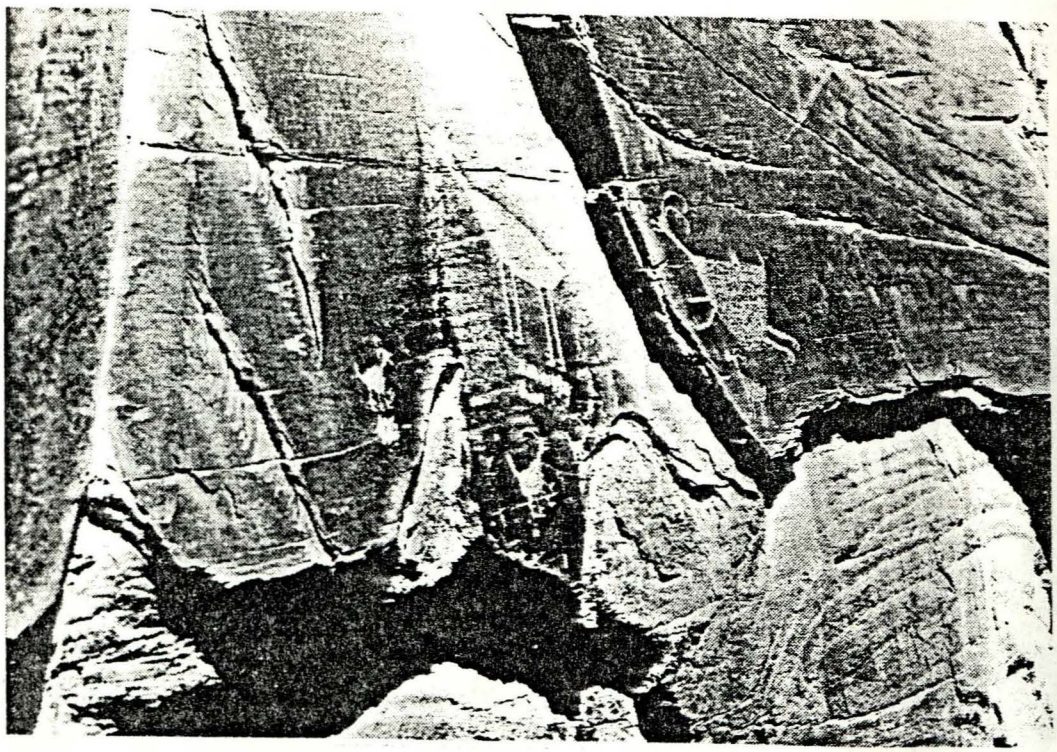
47. Water action on the shore



48. Indented seashores create variety



49. An accessible and dramatic coastal shelf



50. A feature of cultural interest

shoreline form becomes simpler, less indented, lower, and less accessible, the ranking diminishes. Fig.47.

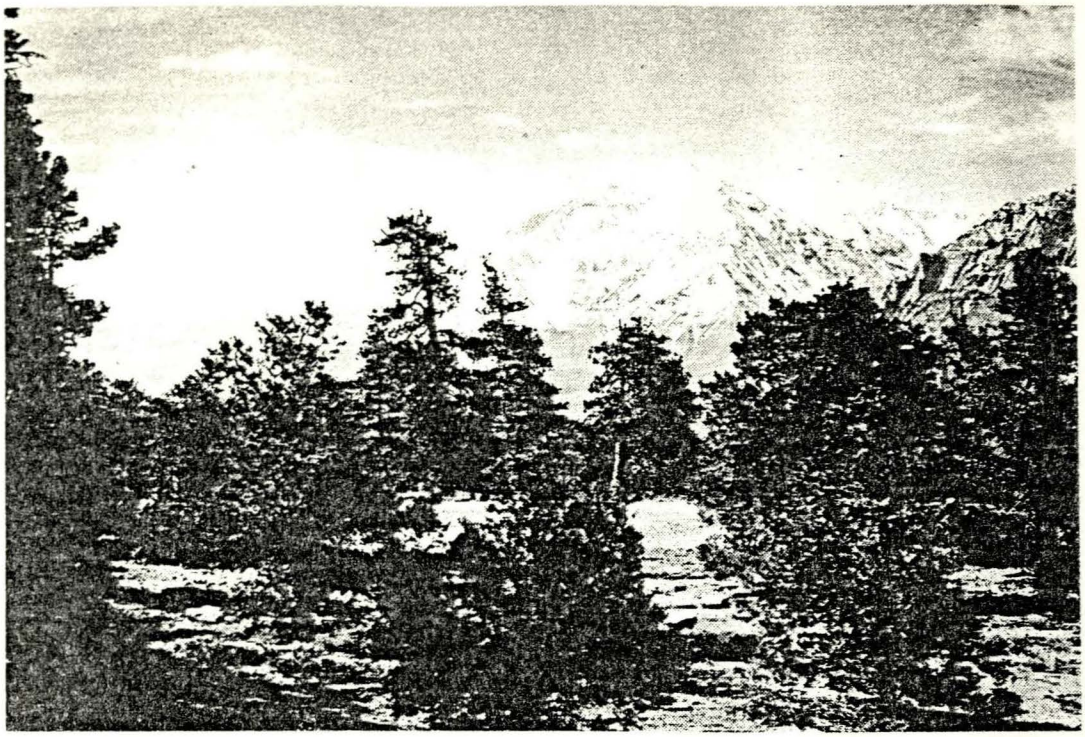
Bays and indentations in the seacoast provide interesting variety. Fig.48. The surge is often unpredictable at varying tide levels and the wind can alter normal patterns drastically. These are places where the long-term sea action can sculpt the shoreline dramatically, offering visible evidence of weather extremes.

Coastal Setting Character The quality and extent of the coastal shelf is a major determinant of human use potential. Accordingly, greater ranking is accorded dramatic seacoast enclosures which exist in combination with a distinct shelf and/or shore access; less for the condition of no access. Fig.49. As the enclosure diminishes in effect--receding from the shore proper--or becomes lower and perhaps less attractively wooded, and the human use potential on beaches is diminished with rocky, obscured, or narrow shores, the comparative ranking is low.

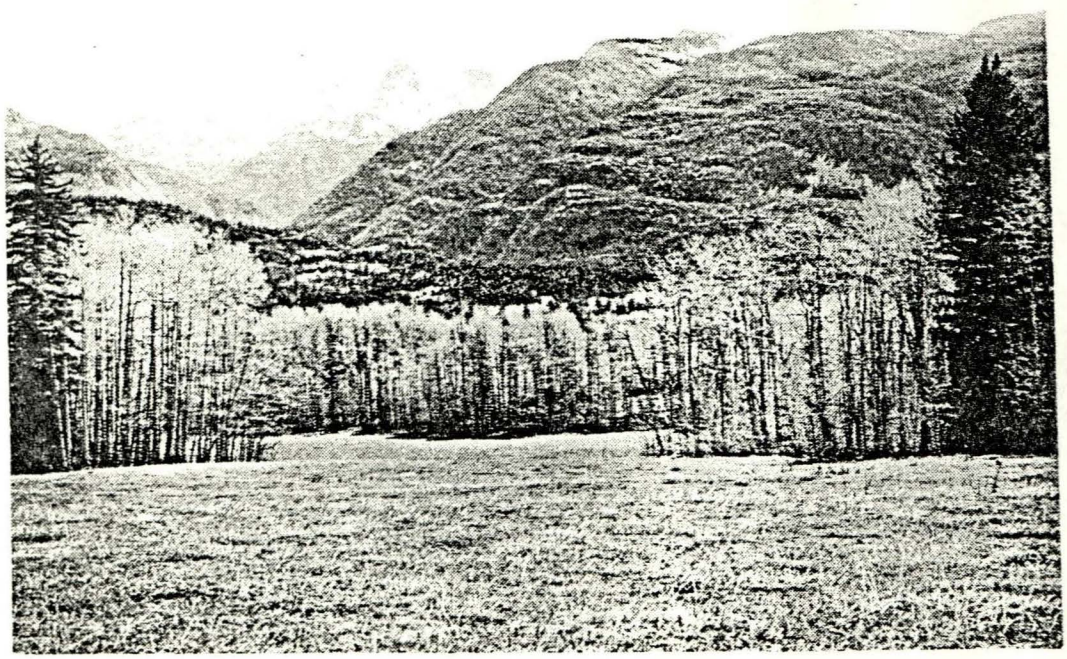
Features and Accents

Specific topographic elements, distinctive waterfalls, rare geomorphic forms, eroded rocky remnants, coastal waterspouts, potholes, whirlpools, and many other familiar prominences and eccentricities of nature add interesting variety to any landscape. Fig.50. In general, there is a consensus that such visual excitement is a good thing. It can establish a focus in landscapes that may be relatively featureless and extensive. It affords the opportunity for viewers to concentrate on an element that may open a door to botany, geology, or vulcanism. Such elements can be educational as well as visually vital.

The possibility of variable types is so extensive and the occurrence so comparatively rare, that freaks of nature have not been included as a separate factor. Peaks and geomorphic features will account for many such surprising natural events. Others may



51. An aid to orientation



52. Natural plant distributions

be cause to alter the rankings given to shorelines or settings when such features enliven a rather ordinary condition.

Of the five different factors described in drawings or text, only two are graphically shown. These are Peaks and Geomorphic Features, and Natural Vegetative Cover and Contrast. Four others, Water Setting Frequency, Falls and Rapids, Snow and Ice, and Visual Unit Linkages can be described in words but not in drawings.

Peaks and Geomorphic Features Here conspicuous mountain peaks are accorded full marks for their orienting qualities and for the topographical dominance they will normally exhibit. Fig.51. High marks are given to those peaks which straddle the unit boundary of two units, so that the peak is actually shared by both, or perhaps by several. Any major peak dominates a wide area and is often situated so that its prominence naturally establishes suitable unit division. Peaks entirely within a single unit is valued less. The lowest comparative ranking is assigned to topography without major accents or features.

Natural Vegetative Cover and Contrast The evocative quality of natural plant distribution is an essential for quality landscapes. Fig.52. Accordingly, this characteristic is highly valued. Contrast developed by natural openings in the cover and by variances in foliage texture and color, or from seasonal variation are accounted for here. The lowest ranking is for continuous cover with no openings. This landscape provides few far-ranging views, little opportunity for orientation, and some sense of hazard.

Water Setting Frequency Many units have the advantage of a combination of water elements and settings. A lake occurring with a stream is a frequent event. A given unit may have several streams, or several lakes, or both. For large units, the most prominent and noteworthy water element should be used to set the comparative ranking. Lesser elements can be counted in this, the water setting frequency group.

The higher rankings go to units with a multiplicity of setting types representative of a vigorously varied and complex landscape. Lower ranking is assigned to units with only one setting type, or none.

Falls and Rapids Water features enliven any scene and contribute to the vitality of any river or stream. Accordingly, an advantage in ranking is warranted for units so endowed. This elaborating factor allows the added advantage that accrues to units with several falls or rapids. The factor accounts for the quality of the setting and the volume of the stream generating the falls or rapids.

Snow and Ice Unit enclosure formed by mountains are significant to scenic quality. The presence of snow or ice--even glaciers--is evidence of high altitudes and topographical prominence. This factor permits the advantage of snow or ice presence to be recorded.

Visual Unit Linkage A fundamental characteristic of scenic landscapes is that they are extensive in nature, even though property ownership, management boundaries, or jurisdictions may interrupt the thread of continuity in places. An central argument advanced in this study is that extended landscapes should be respected, insofar as their regional character is concerned, regardless of jurisdictions. Otherwise, the artificial boundaries of towns, highway rights-of-way, property lines, and the limits of management strategies may dominate, and continuity destroyed. To succeed in this difficult but worthwhile direction, cooperation and agreement on standards must prevail.

This factor suggests that there is worth in units which have strong links to other adjacent units. Carried even farther, a series of scenic units that are connected in some fashion by a meaningful connection element such as a road, a river, or a railroad, has a distinct advantage over an alternate cluster of units not strongly

connected, even though the latter group may enjoy qualities or features that are better than average.

This factor accounts for hanging valleys and corridors, and for elements that help to signify and mark the interconnections between units. In short, the emphasis is upon the visual--and upon the memory factor--to bring added clarity and emphasis to the flow and logic of the landscape totality.

Development, Structures, and Impacts

Although trash heaps and mine spoil are included within this last grouping of factors, it should be made clear that not all impacts are negative, nor can they be automatically equated with development. And, although the obvious thread of this study is to emphasize valuable components of the natural scene rather than houses or railroad tracks, it is clear to me that traces of human work is attractive in the landscape--whether we are seeing a more or less natural place, a wilderness, or a park--we are easily drawn to objects mark the presence of others. Some of that tendency may be explained by the evident contrast between examples such as tunnels and caves, a contrast that leaps at one in almost all situations. But a better reason this tendency is evident is that human endeavor draws us together strongly; we look as attentively at contrasts of this type as we look at groups of people at the beach. We are drawn inevitably to the human condition.

Accordingly, the question of development, or building, chopping, mining, digging, and the like need to be approached gingerly. There should be clarity in what is desired and what is right for the landscape. For the purposes of this study, it is reasonable to define an impact as the result of human work which was done with no respect for the rights of the common environment, and an equal lack of respect for the rights of other humans who cannot escape the resulting distortion of visual quality. A secondary, and necessary definition is that an impact can be a well-intentioned element like a water

tower or transmission line which is so evident and alien a contrast that no amount of design or careful siting could prevent it's dominance. The latter class of impacts we shall have to learn to live with because they are inescapable. Happily, good design and thoughtful siting, followed by thoughtful management, can often mitigate the most difficult problems.

On the positive side, there is definite charm and power to productive agriculure, small towns of good fit in their local environment, many roads and recreation facilities, and even recreation communities. The design success of the Forest and Park services, who have based their work on thoughtful and professional design solutions, and demonstrated good husbandry in natural situations, demonstrates the potential power of a committment to quality and a respect for the visual environment.

Agriculture and Forestry The gradation within this factor address the important question of fit, as exemplified in edges and the contrast of areas and surfaces. It is often possible to soften the strongest contrast situations by simple means. Paint as productive camouflage, selective cutting or thinning of fringe forests as an alternate to hedge-sharp margins, subdued siting of naturally prominent elements are all proven strategies which work. Using this factor, those landscapes which succeed in subduing the radical contrasts of development earn high comparative ratings.

Development Structures There are so many possible variations on this theme that it will require adaption of a local situation to make a fit with the drawings. The broad distinctions drawn should permit a reasonable match.

Good design and careful siting is almost always attractive and inoffensive. It is obvious lack of attention to these important considerations that is detrimental or offensive. In particular, the inadvertent overwhelming of the visual landscape is difficult to control, given the limited influence of government and the normal enthusiasm involved in new work. The drawings show possible conditions within these polarities, and ranking in proportion to the least disruptive.

Impacts The range of impacts shown here range from well sited or concealed, to overpowering and long-term scarring of the landscape.

Conclusions

The present methods used for inventory and analysis of the visual resources of the United States public lands and those of the Forest Service are limited in their effectiveness. A careful review of the details of the methods of VMS suggests that they are also self-serving. The mandate of the Congress, and the general sentiments expressed by many Americans, require that more rigorous protection of the visual qualities of the public lands become a priority objective in the decision process. The present decline of the National Forests is testimony to the lack of balance in planning, with clear emphasis upon utilizing the forest resource as a source of economic gain at the expense of scenic values and recreation. The Service has qualified and dedicated professional personnel who can reverse this trend and who are capable of more, provided that visual quality objectives are expanded and improved, and that such objectives are given greater weight at the policy level.

The methods of VMS have provided a substantial base of information useful in planning. The system works, but fails to offer adequate protection and consideration for the bulk of the land area, primarily because of its emphasis on special management strategies in only those areas likely to be seen clearly as problems.

The methods of inventory and comparative ranking described here as the Visual Unit System, may be helpful and a possible approach for the future. The methods used are simple, involving procedures presently followed in VMS.

The major point of difference is in respecting the structural qualities of terrain and natural space, as motivation. VMS has proposed a complex and ingenious system for protecting the outlook from sensitive places, but does not adequately retain a proportion of the best landscapes, on the grounds that they are visually important.

Most areas of the public forest are rightly destined to be prudently harvested as paper stock or for timber. Part has been retained for the storage of badly needed water. Some areas that are visually striking and that are emplaced within active forests, have been held in reserve, or favored with special handling. But the tendency has been to view the visual and recreational resource in a lesser light. That tendency should be reversed.

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SPATIAL DIMENSION AND CHARACTER

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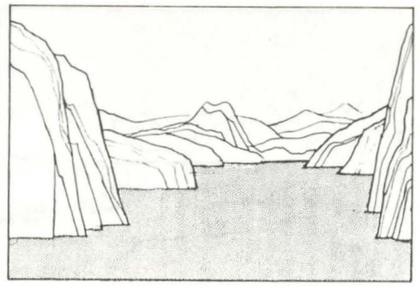
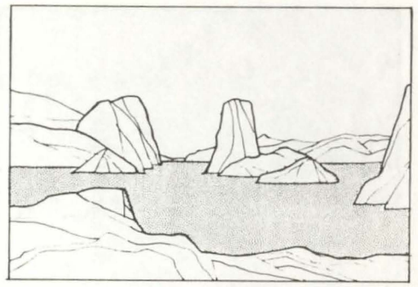
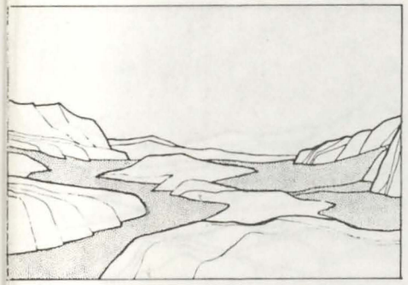
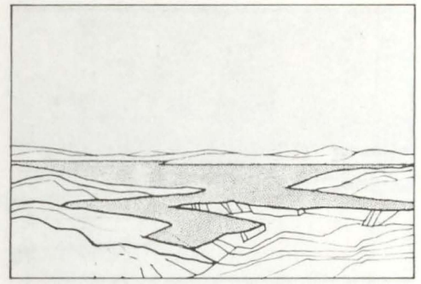
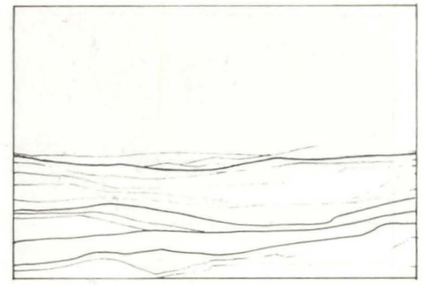
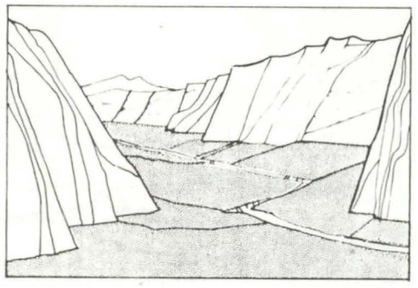
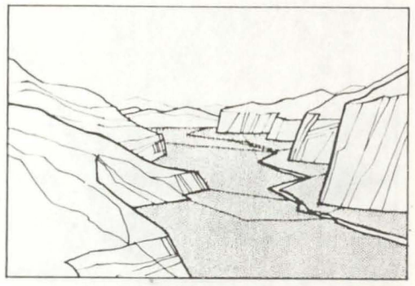
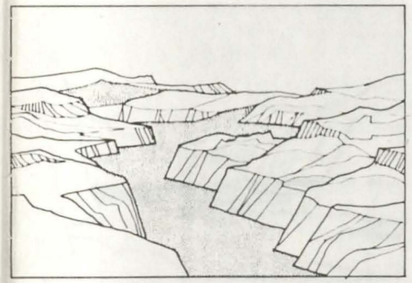
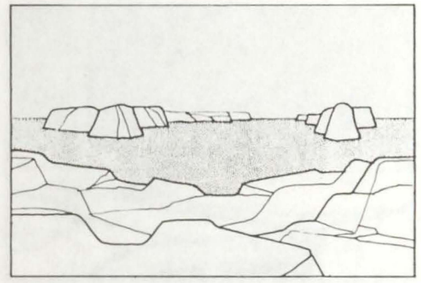
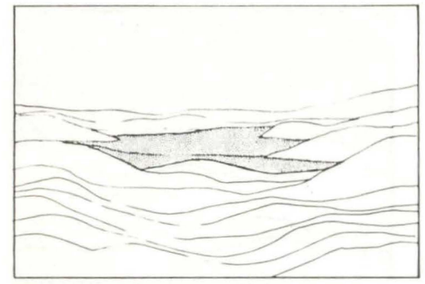
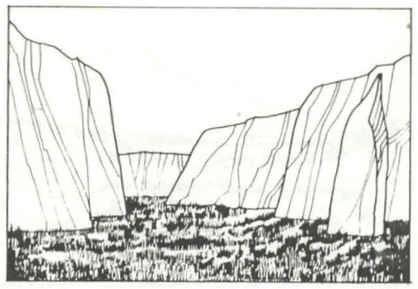
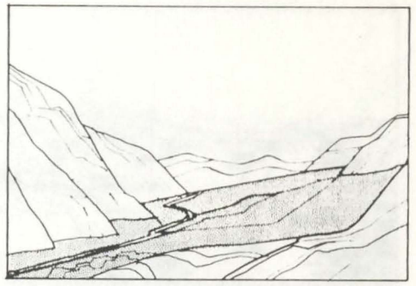
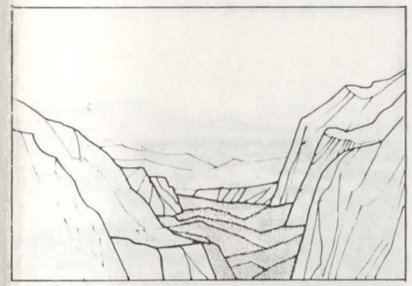
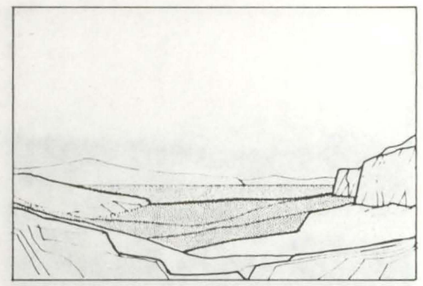
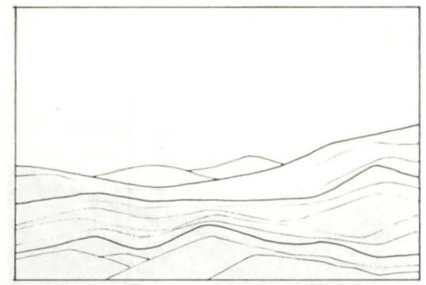
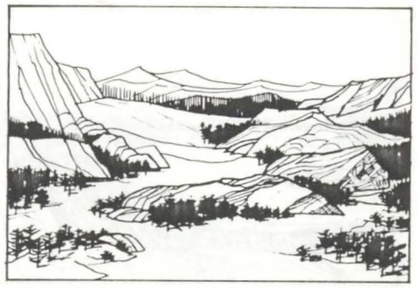
SPATIAL VIVIDNESS	 SIMPLE VIVID VALLEY FORM. EXTENSIVE OR MONUMENTAL	 COMPLEX CONSPICUOUS VALLEY FORM. MANY BRANCHES ; EXTENSIVE	 DISTINCT BRANCHED VALLEY: PORTIONS SIMPLE AND VIVID	 DIFFUSE VALLEY FORM; LARGE DEFINED BASIN	 TOPOGRAPHIC DEPRESSION. DEFINITION LIMITED
CROSS SECTION COMPLEXITY	 PRIMARY ENCLOSURE UNIFIED AND VIVID	 PRIMARY AND SECONDARY ENCLOSURE ARE CONSPICUOUS AND COMPLETE	 PRIMARY ENCLOSURE UNIFIED AND DISTINCT SECONDARY COMPLEX OR INDISTINCT	 ENCLOSURE DISTINCT BUT DISCONTINUOUS	 IRREGULAR ENCLOSURE SECTION. DEFINED BY FOLDS OR PLATEAU EDGE
CROSS SECTION CONTRAST	 VIVID VERTICAL OR STEEP ENCLOSURE CONTRASTING FLOOR OFTEN EXTENSIVE	 CONSPICUOUS STEEP ENCLOSURE. SLOPING, DISHED, OR STEPPED FLOOR	 DISTINCT ENCLOSURE. NARROW, SLOPING STEPPED, OR STREAMBED FLOOR	 STEEP BUT LOW ENCLOSURE WITH LEVEL OR EXTENSIVE FLOOR	 BROAD DISHED OR IRREGULAR FLOOR SOME ENCLOSURE ACCENTS
SPATIAL ACCESSIBILITY	 TERRAIN PERMITS EXTENDED EXPLORATION OF UNIT ENCLOSURE AND SPATIAL DIMENSIONS	TERRAIN PERMITS ACCESS TO MAJOR SPATIAL AND SCENIC ELEMENTS. CONNECTION OBSCURE TO SOME MINOR REMOTE SECTIONS	TERRAIN RESTRICTS EASY ACCESS TO PORTIONS OF FLOOR AND ENCLOSURE. FULL ACCESS IS OBSCURE, OFTEN DIFFICULT	ACCESS REMOTE, COMPLEX, & OFTEN STRENUOUS, RESTRICTING REALIZATION OF SPATIAL DIMENSIONS	BROKEN FLOOR, STEEP ENCLOSURE, OR DENSE COVER LIMITS ACCESS, SERIOUSLY RESTRICTING SPATIAL CLARITY

SPATIAL DIMENSION AND CHARACTER (cont.)

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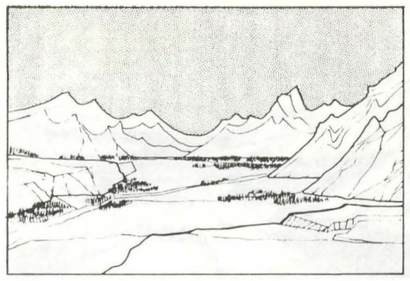
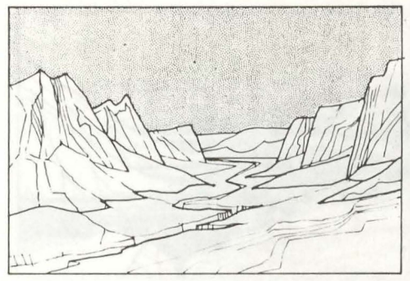
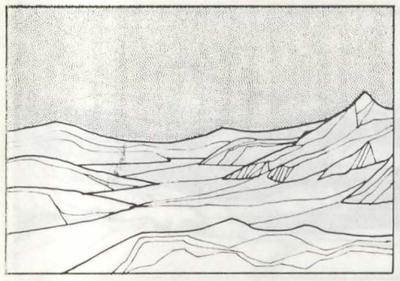
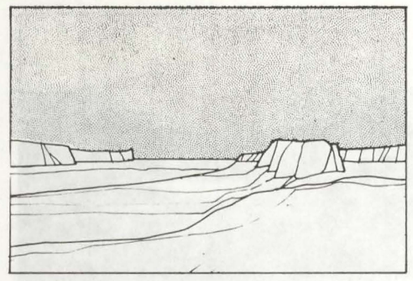
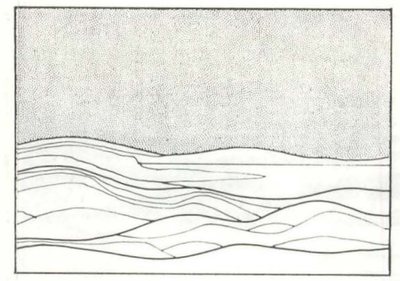
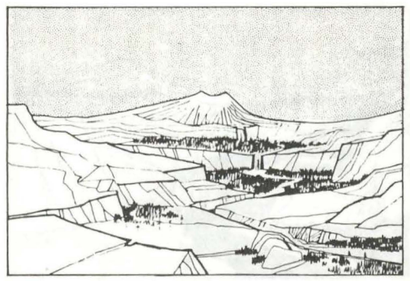
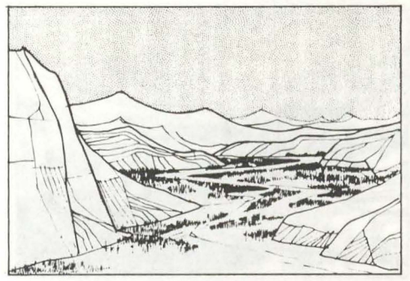
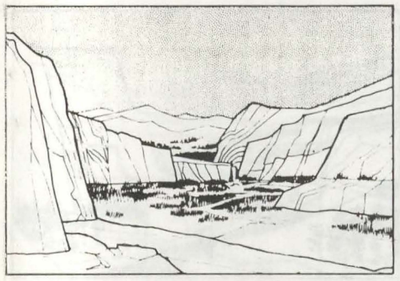
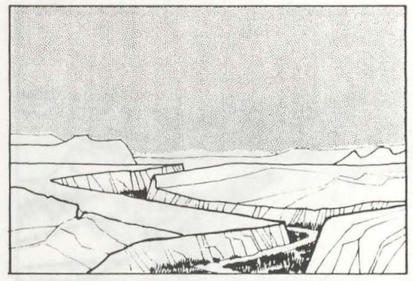
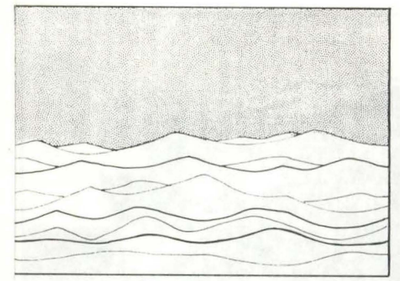
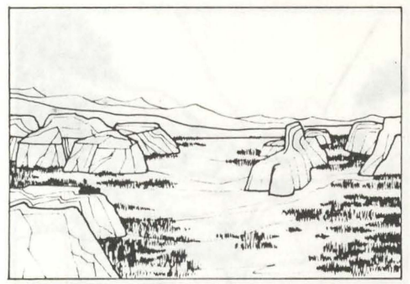
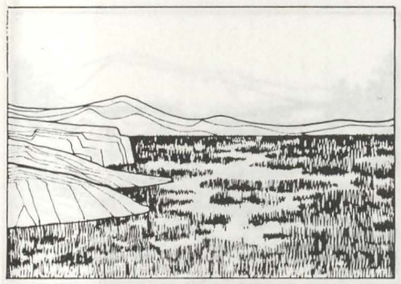
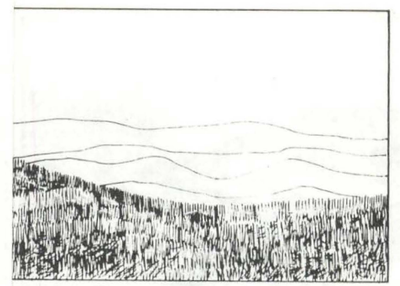
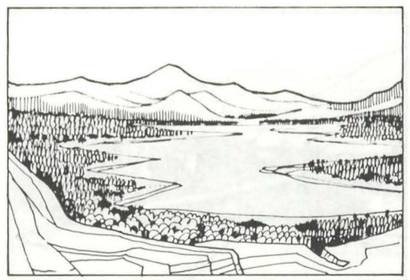
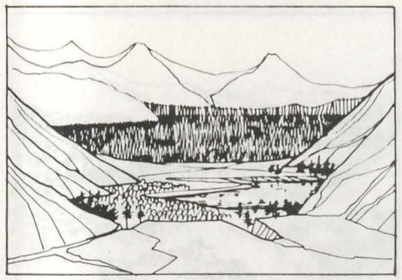
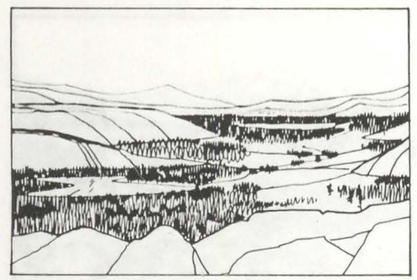
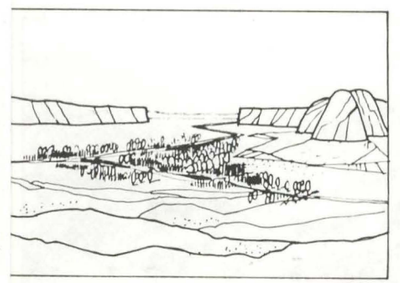
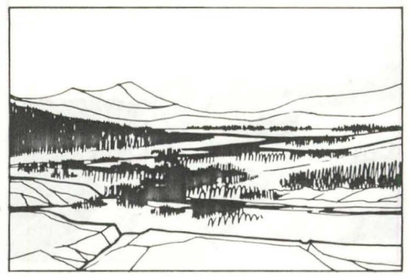
SKYLINE	 SHARP AND VIVID ALL AROUND	 MOSTLY SHARP AND CONSPICUOUS. DISTINCT ALL AROUND	 SHARP AND VIVID ACCENTS. MOSTLY DISTINCT AND REGULAR	 DISTINCT OR DEFINITE IN PARTS	 LOW, DISCONTINUOUS, OVERLAPPING OR INDISTINCT
FLOOR PROFILE	 UNIFIED SERIES OF VIVID TERRAIN OR WATER ELEMENTS	 CONSPICUOUS AND EXTENSIVE LAKE OR STREAM-RELATED PROFILE	 DISTINCT: PORTIONS SEGMENTED OR WATER ORIENTED	 SEGMENTED BY BROKEN TERRAIN OR WATERCOURSE	 DISCONTINUOUS OR INCONSPICUOUS EXPANSIVE, LEVEL, OR UNDULATING
FLOOR CHARACTER	VIVID EXPANSE OF OPEN TERRAIN OR WATER IN MIDST OF PEAKS AND SCENIC FEATURES EXTENSIVE PANORAMIC VIEWS	 CONSPICUOUS EXTENT OF CONTRASTING OPEN AND ENCLOSED TERRAIN FRAMING DISTANT VIEWS	 DISTINCT OPENINGS IN FORESTED OR BROKEN FLOOR; SOME DISTANT VIEWS (OR) OPEN TERRAIN WITH DISTINCT BUT LOW ENCLOSURE	MOSTLY FORESTED OR HEAVILY BROKEN. INFREQUENT GLIMPSES OF DISTANT VIEWS	 HEAVILY FORESTED OR CONFINED FLOOR. NO NO SIGNIFICANT OPEN AREAS OR VIEWS
WATER FORM AND SETTING					
LAKES: EXTENT AND CHARACTER	 MAJOR LAKE (S)	NUMEROUS RELATED LAKES (OR) SIGNIFICANT CENTRAL LAKE	 SIGNIFICANT REMOTE OR ISOLATED LAKE	 SCATTERED SMALL LAKES (OR) EXTENSIVE MARSH OR WEEDY LAKES	 INTERMITTENT OR SEASONAL WATER. NO LAKES

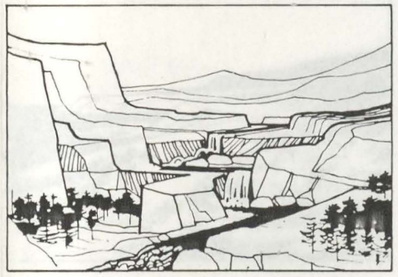
A2 A3

WATER FORM AND SETTING (cont.)

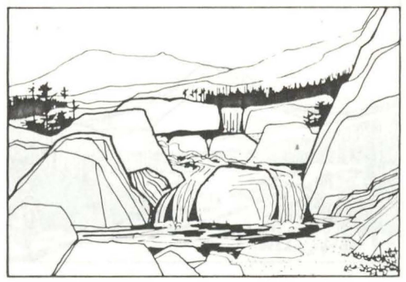
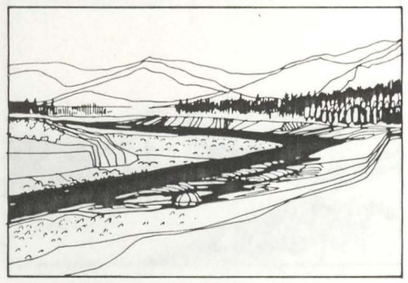
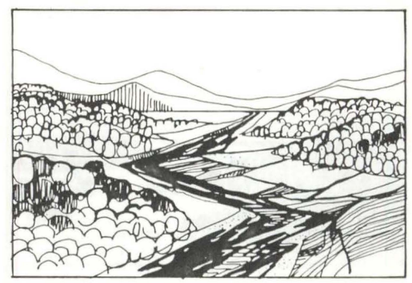
LAKES: SHORELINE FORM

10	4	2	1	0
				
VIVIDLY INDENTED LAKESHORE (OR) MANY CLOSELY CLUSTERED LAKES	MOSTLY IRREGULAR; SOME INDENTED SHORES, BAYS, OR ELEVATED SHORES. CLUSTERED LAKES	MOSTLY REGULAR. MINOR INDENTATIONS, BAYS, OR ELEVATED SHORES	SIMPLE OR REGULAR FORMS CLEAN OR WOODED SHORES	SIMPLE AND REGULAR WITH LOW UNIFORM SHORE. OFTEN MARSHY OR BRUSHY

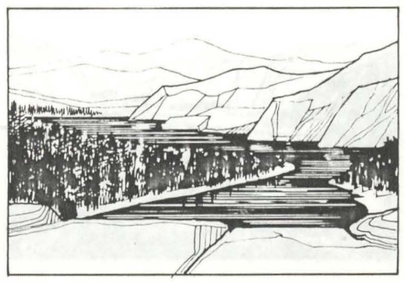
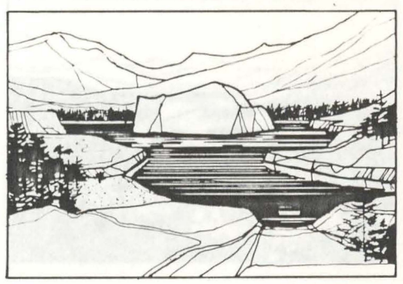
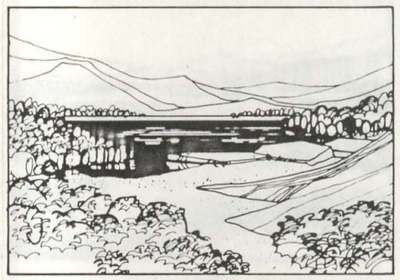
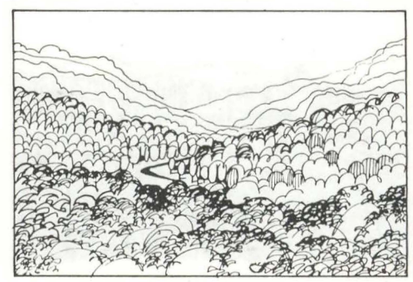
RIVERS AND STREAMS EXTENT AND CHARACTER

				
EXTENSIVE HIGH VOLUME STREAM; VIVID MOTION IN SPACIOUS SETTING	EXTENSIVE HIGH VOLUME PLACID STREAM MINOR ACTIVE STRETCHES	VISUALLY ACTIVE LOW VOLUME STREAM IN RESTRICTED SETTING	LOW VOLUME OPEN STREAM. OFTEN PLACID OR MARSHY	MINOR STREAM; INCONSPICUOUS OR CONCEALED; SEASONAL OR INTERMITTENT

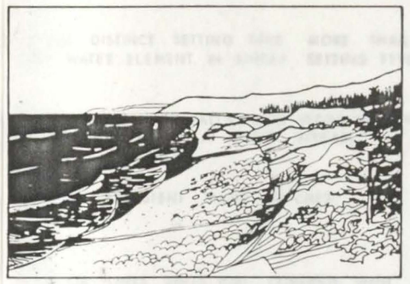
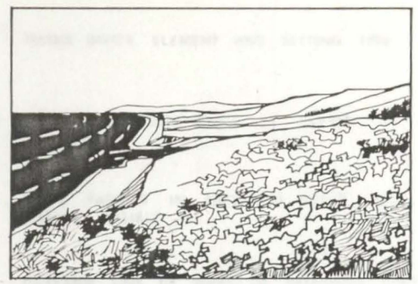
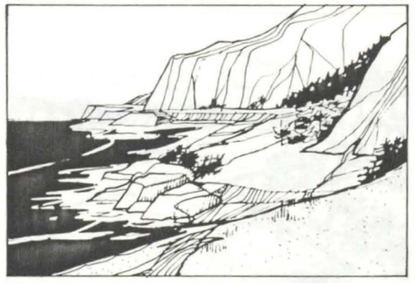
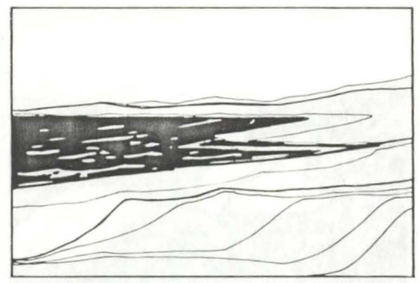
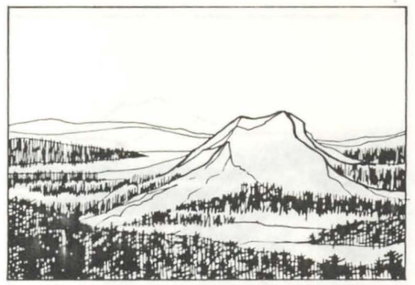
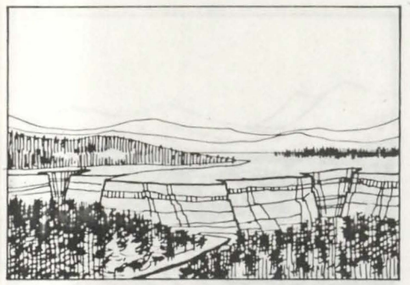
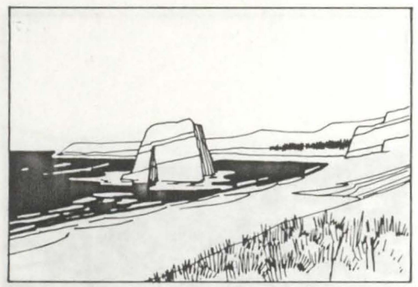
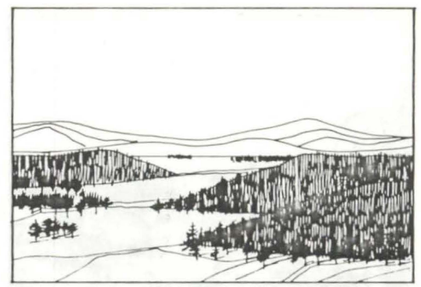
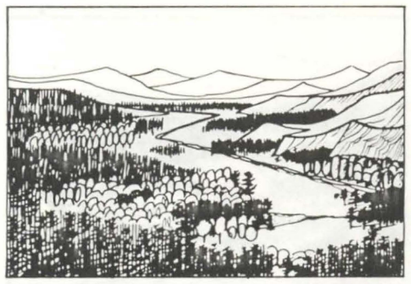
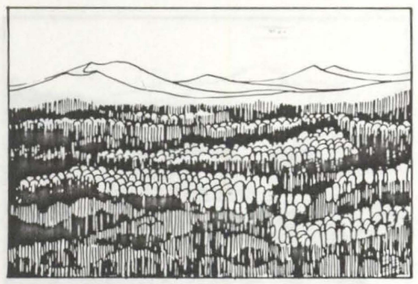
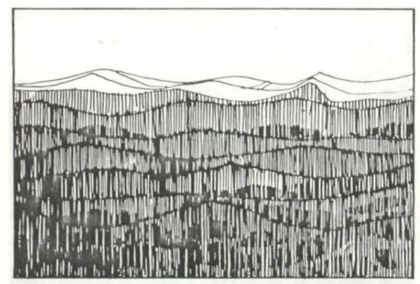
RIVERS AND STREAMS SHORELINE FORM

				
VIVID CHANNEL IN ERODED BEDROCK SETTING OPEN AND ACCESSIBLE	CONSPICUOUS CHANNEL. BANKS ROCKY OR STEEP. SETTING DIFFICULT OR INACCESSIBLE	DISTINCT CLEAN ROCK OR GRAVEL BED BANKS VARIABLE. OPEN SETTING	MOSTLY UNIFORM LOW MUD AND GRAVEL BANKS IN OPEN SETTING	COMPLEX CHANNEL OFTEN BRAIDED OR SINUOUS. LOW VARIABLE SHORE

STREAM AND LAKE SETTING

				
STEEP PRIMARY ENCLOSURE FORMS VIVID SETTING AND CONTAINMENT	LEDGES OR STEEP FACES FORM CONSPICUOUS LAKE BASIN OR STREAM WATERCOURSE. (OR) ALPINE SETTING	WATER ELEMENT PROMINENT IN DISTINCT BASIN, VALLEY, OR CANYON	OPEN SETTING IN VARIED TERRAIN (OR) FOREST OPENINGS FORM SETTING	OPEN SETTING IN STEEP CANYON (OR) SETTING SCREENED BY FOREST

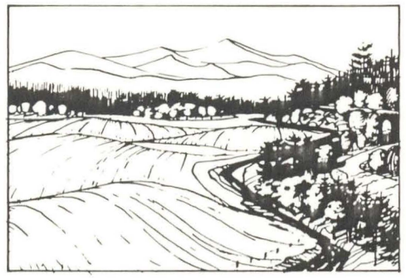
WATER FORM AND SETTING (cont.)

	10	4	2	1	0
COASTAL SHORELINE FORM	VIVID SHORELINE DELINEATED BY COVES, BAYS, OR CONSPICUOUS FEATURE ELEMENTS	CONSPICUOUS ROCKY SHORES OR PROMONTORIES INTERRUPT BEACH SHORELINE	 OCCASIONAL DISTINCT LEDGES OR PROMONTORIES BOUND SANDY OR GRAVEL BEACHES	 BEACHES WITH MOSTLY LINEAR SHORE OCCASIONAL INDENTATIONS	MOSTLY LINEAR SHORELINE. INFREQUENT SAND OR GRAVEL BEACHES
COASTAL SETTING CHARACTER	 VIVID HIGH TOPOGRAPHY ENCLOSES ACCESSIBLE COASTAL SHELF	CONSPICUOUS HIGH TOPOGRAPHY BOUNDS OFTEN INACCESSIBLE COASTAL SHELF	FOREST OR VARIED TOPOGRAPHY BOUND DISTINCT COASTAL SHELF	VARIETY IN PLANT GROUPS OR TERRAIN ACCENTS MOSTLY LEVEL LOW COASTAL SHELF	 LOW VARIABLE OPEN SHORE (OR) TERRAIN OBSCURED BY FOREST
FEATURES AND ACCENTS					
PEAKS AND GEOMORPHIC FEATURES	VIVID PEAK OR GEOMORPHIC ELEMENT IS ORIENTING LANDMARK FOR SEVERAL ADJOINING UNITS	 CONSPICUOUS PEAK OR GEOMORPHIC FEATURE DOMINATES UNIT	 DISTINCT GEOMORPHIC ELEMENT(S) IS FEATURE WITHIN UNIT	 GEOMORPHIC ELEMENT(S) ADD VARIETY TO PORTIONS OF UNIT	 TOPOGRAPHY CONTINUOUS IN TYPE. FEW DISTINCTIVE FEATURES
NATURAL VEGETATIVE COVER AND CONTRAST	VIVID PLANT PATTERNS EMPHASIZE LAND FORMS AND ECOLOGICAL CONDITIONS. EXTENSIVE NATURAL OPENINGS AND EDGES	 CONSPICUOUS PLANT CONTRASTS AND PATTERNS SIGNIFICANT NATURAL OPENINGS. SOME GEOMORPHIC ACCENTS	THIN OR SCATTERED COVER CONTRASTS WITH EXTENSIVE OPEN SPACE	 DISTINCT CONTRASTS IN COLOR AND PATTERN INFREQUENT OPEN SPACE	 CONTINUOUS UNIFORM COVER

FEATURES AND ACCENTS (cont.)	10	4	2	1	0
WATER SETTING FREQUENCY	THREE OR MORE DISTINCT WATER SETTING TYPES IN UNIT	TWO OR MORE DISTINCT WATER SETTING TYPES IN UNIT	SINGLE DISTINCT SETTING TYPE. MORE THAN ONE WATER ELEMENT IN SINGLE SETTING TYPE	SINGLE WATER ELEMENT AND SETTING TYPE	SINGLE WATER SETTING TYPE: INTERMITTENT, SEASONAL, OR ABSENT
FALLS AND RAPIDS	SERIES OF SIGNIFICANT FALLS ON SINGLE STREAM. (OR) TWO OR MORE SEPARATE HIGH FALLS (OR) SINGLE HIGH VOLUME HIGH FALL	SINGLE LOW VOLUME HIGH FALL IN VIVID SETTING (OR) SINGLE HIGH VOLUME LOW FALL (OR) SERIES OF LOW FALLS ON SINGLE STREAM	LOW VOLUME HIGH FALLS (OR) SERIES OF RAPIDS OR MINOR FALLS ON A SINGLE STREAM	LOW VOLUME LOW FALLS OR RAPIDS	NO SIGNIFICANT FALLS OR RAPIDS
SNOW AND ICE	GLACIERS IN UNIT	PERSISTENT AND EXTENSIVE ICE AND SNOW	ISOLATED PERSISTENT SNOW PATCHES	SNOW PATCHES IN SHELTERED AREAS. NOT WIDELY VISIBLE	NO PERSISTENT SNOW OR ICE
VISUAL UNIT LINKAGES	UNIT IS SCENIC CLIMAX TO ADJOINING UNITS OF HIGH QUALITY	UNIT IS LINK IN CHAIN OF MAJOR SCENIC UNITS (OR) HANGING VALLEY WITH FALLS OR OTHER CONSPICUOUS CONNECTION	CORRIDOR LINKS UNITS (OR) CORRIDOR WITH ACCESS THROUGH MAJOR UNIT	CORRIDOR LINK TO WEAK OR EXTENSIVE UNIT	OBSCURE OR DIFFICULT ACCESS OR LINKAGE

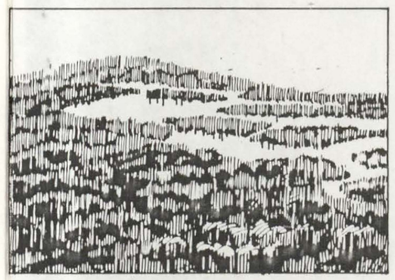
DEVELOPMENT, STRUCTURES, AND IMPACTS

AGRICULTURE AND FORESTRY

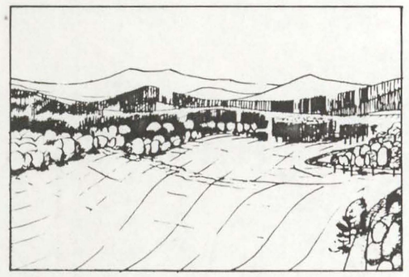


WELL MAINTAINED CULTIVATION AND SERVICE FACILITIES ADAPTED TO MAJOR SCENIC VALUES (OR) NO COMMERCIAL AGRICULTURE OR FORESTRY

CULTIVATION MAY ALTER LAND FORM BUT EDGE AND EXTENT RESPECT MAJOR VISUAL ELEMENTS (OR) SECOND GROWTH FOREST COVER



PRODUCTIVE CULTIVATION ON BARREN LAND OR CAREFUL CLEARINGS IN HEAVY COVER PROVIDE POSITIVE VISUAL CONTRAST



WELL MAINTAINED CULTIVATION FORMS POSITIVE CONTRAST IN POOR AGRICULTURAL, FORESTRY OR SUBURBAN SETTING

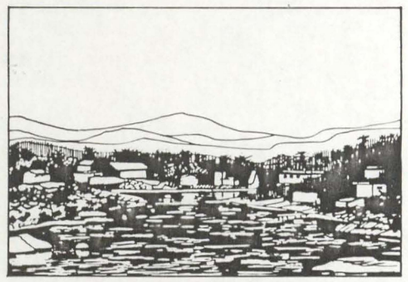
CULTIVATION OR FORESTRY OVERWHELMS NATURAL ATTRIBUTES AND FORMS

DEVELOPMENT STRUCTURES

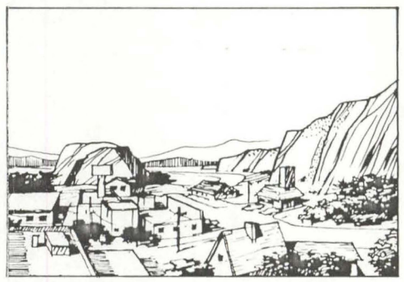
INFREQUENT STRUCTURES DESIGNED TO ASSUME SUBORDINATE ROLE FAVORING SCENIC VALUES

DEVELOPMENT THAT HAS EARNED A HISTORICAL, LOCATIONAL OR SOCIAL VALUE OVER TIME

LIMITED, CAREFULLY SITED DEVELOPMENT FORMS POSITIVE CONTRAST WITH NATURAL VALUES

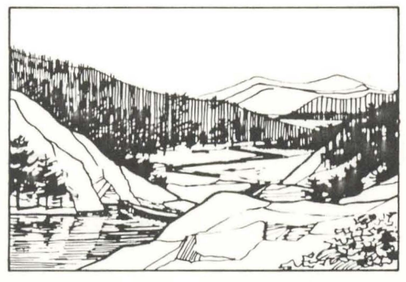


CASUAL, INCREMENTAL, OR WEAK DEVELOPMENT DOMINATES SCENIC VALUE IN PARTS OF UNIT



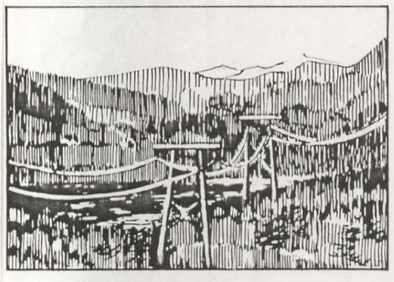
EXTENSIVE NEGATIVE DEVELOPMENT CONTRASTS SIGNIFICANTLY REDUCE SCENIC VALUES IN UNIT

IMPACTS

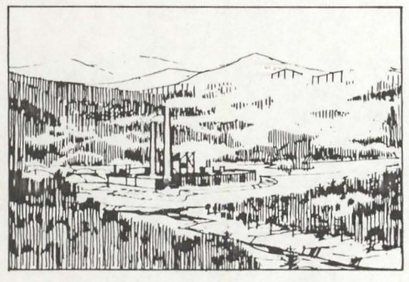


WILDERNESS OR UNIMPAIRED LANDSCAPE. MINOR IMPACT ELEMENTS CAREFULLY SITED

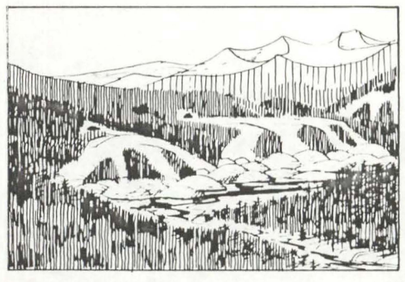
DEVELOPMENT IMPACTS DO NOT IMPAIR MAJOR SCENIC FEATURES OR ENCLOSURE



IMPACT ELEMENTS WIDELY DISPERSED. REDUCED SCENIC VALUES IN LIMITED SECTIONS OF UNIT



MAJOR REDUCTION OF VISUAL QUALITY IN SETTINGS OF SCENIC SIGNIFICANCE



EXTENSIVE DEVELOPMENT SCARS OVERWHELM FORMER NATURAL QUALITY

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